CIO

THE MAGAZINE FOR INFORMATION EXECUTIVES

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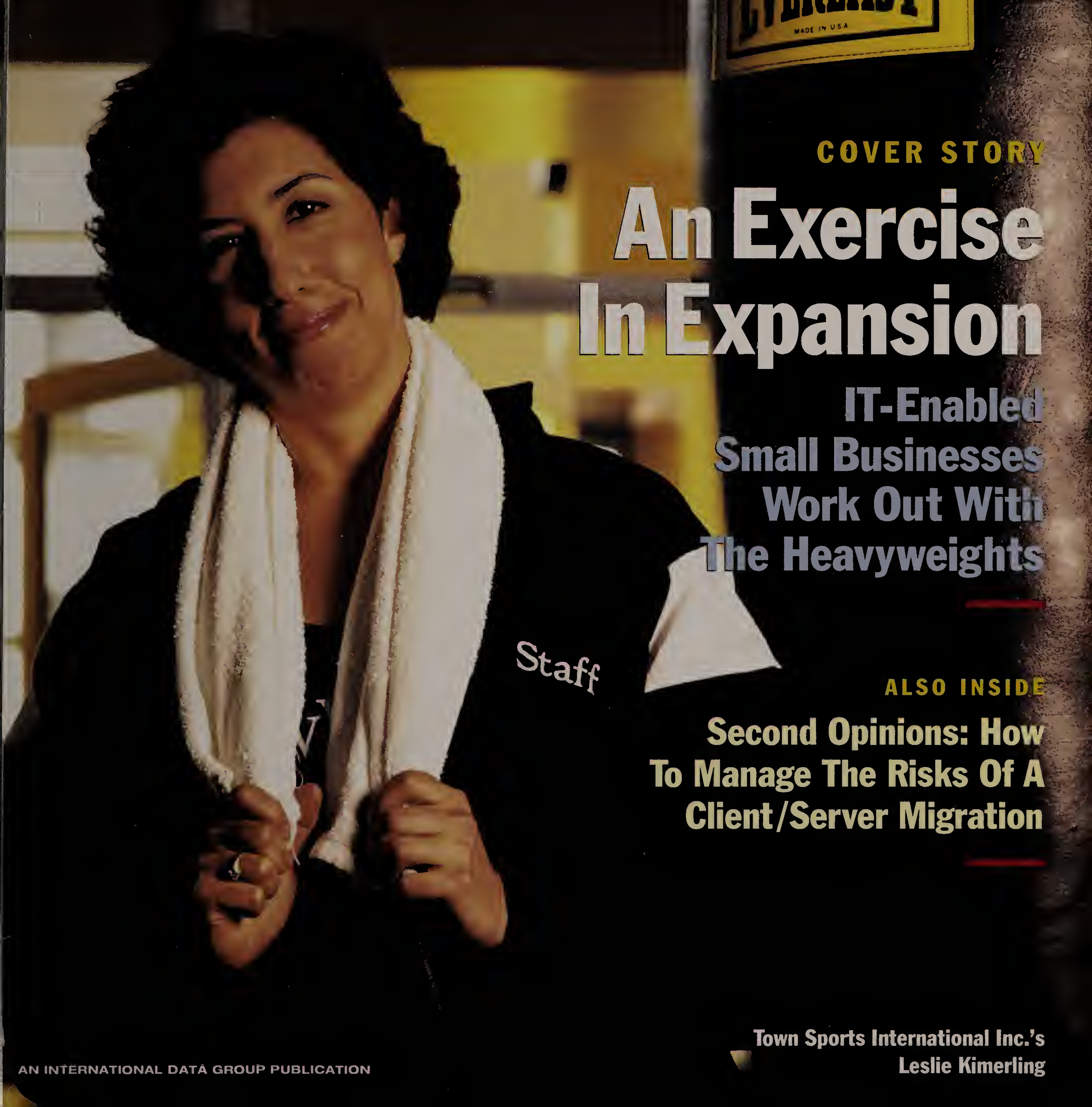


COVER STORY

An Exercise In Expansion

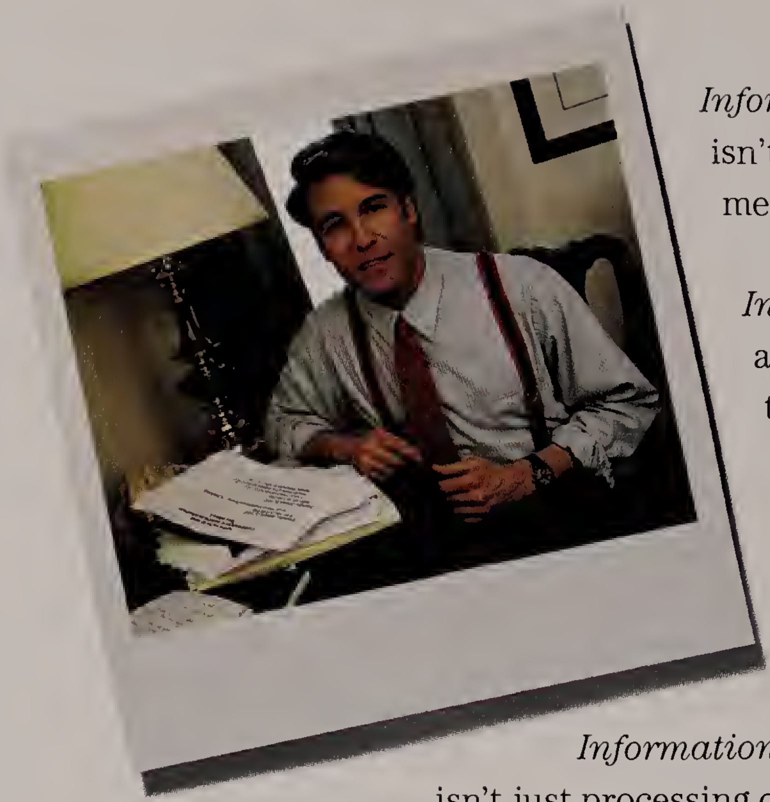
IT-Enabled Small Businesses Work Out With The Heavyweights

ALSO INSIDE

Second Opinions: How To Manage The Risks Of A Client/Server Migration

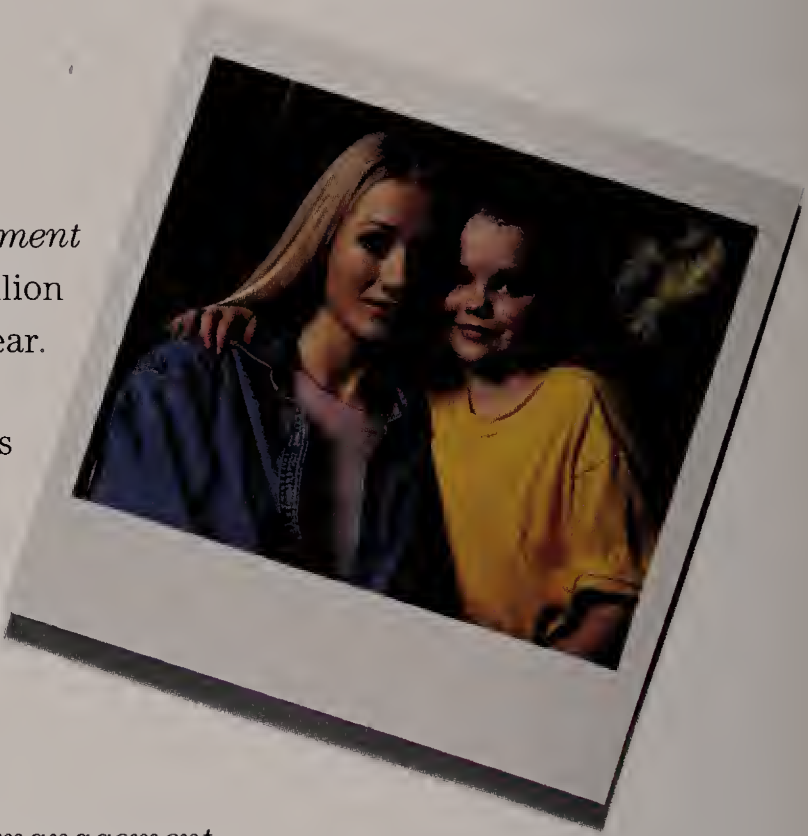
Town Sports International Inc.'s
Leslie Kimerling

AN INTERNATIONAL DATA GROUP PUBLICATION



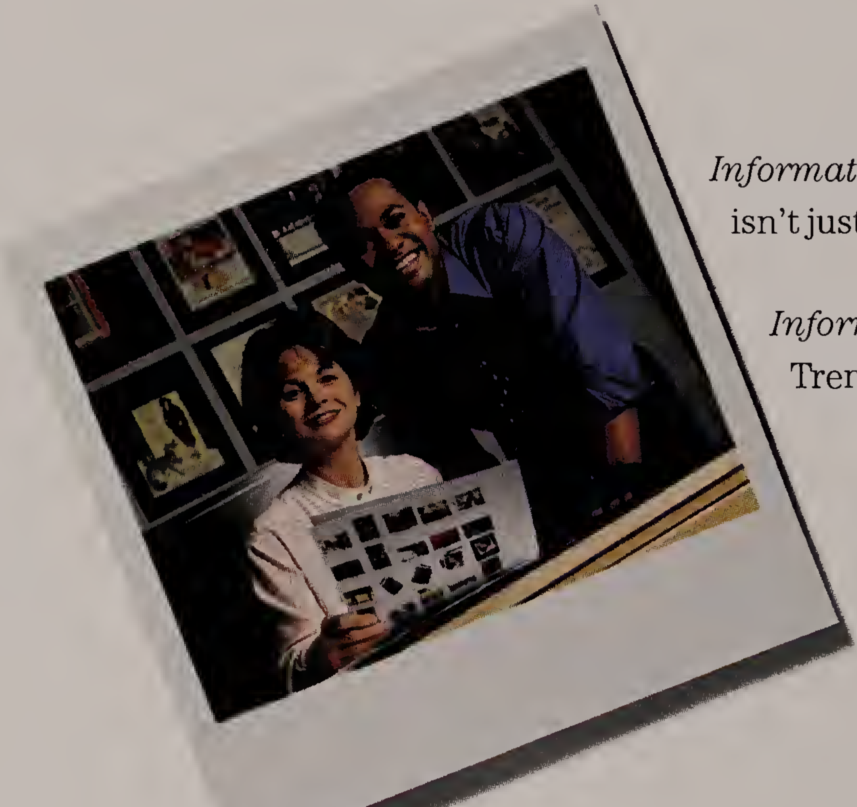
Information management isn't just processing 3 million voice messages every day.

Information management also helps Tom Welch confirm that the big deal went through.



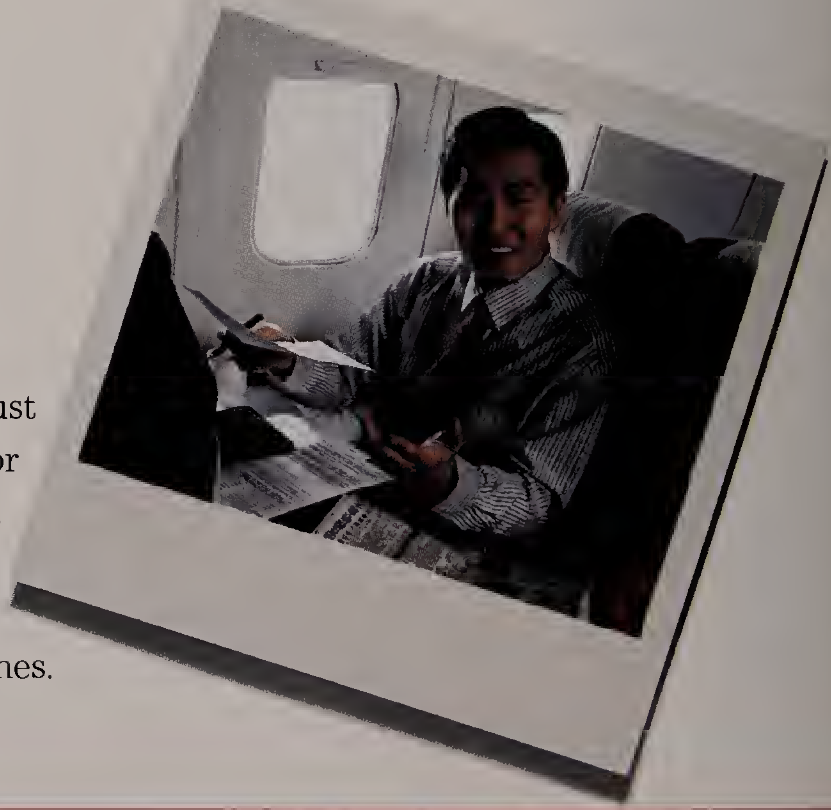
Information management isn't just processing over 10 million emergency phone calls a year.

Information management also makes sure Carol Boyd's daughter gets the medical treatment she needs.



Information management isn't just processing 10 billion checks a year.

Information management also confirms that the Tremba Design check cleared today.



Information management isn't just processing millions of reservations for 140 of the world's airlines.

Information management also tracks every leg of Richard Wong's trip—even across several airlines.

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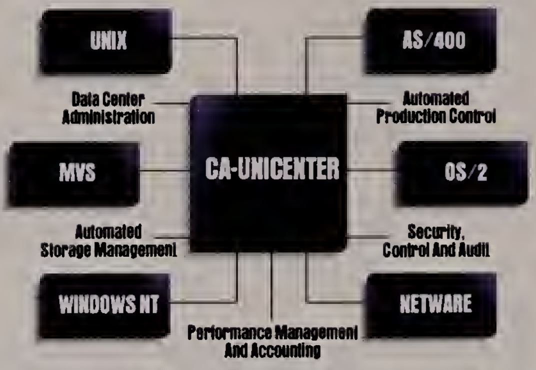
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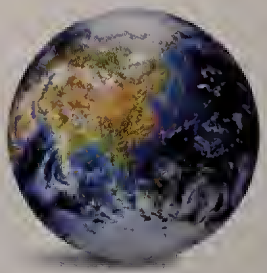

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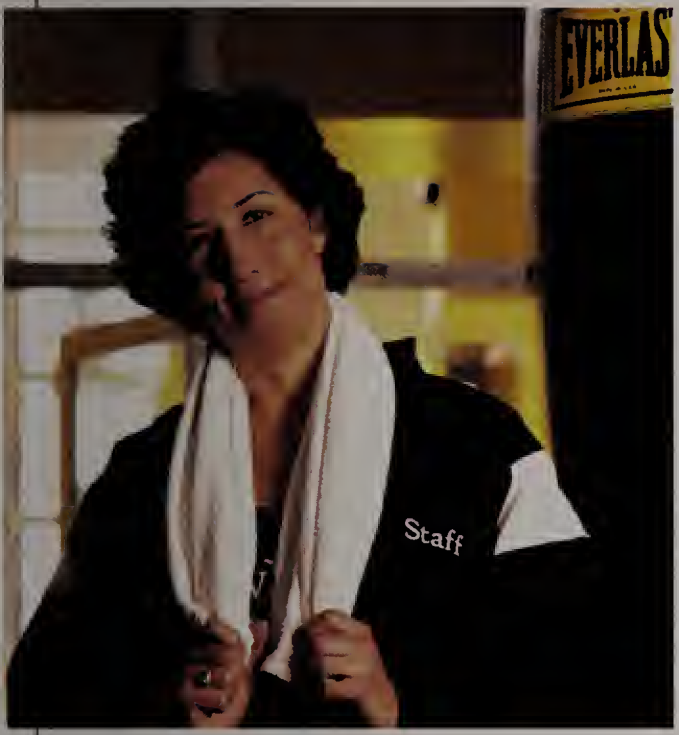

COVER STORY

SMALL BUSINESS **38**

Pumping Up the Volume

Small may indeed be beautiful, but it's a stage to grow out of. No one wants to stay small forever. Expansion-minded businesses can leverage technology to help accelerate growth—without stiffing the customers.

By Megan Santosus

Building market muscle **38**
Cover photo by
Erica Freudenstein/SABA

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Value Awards
application
follows Page **8**

CIO

Call for Entries

Enterprise Value Awards

DEADLINE: JULY 1, 1995

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BUSINESS INNOVATION **31**

Of Human Bonding

Business-process innovation can come from within and without. For one manufacturing company on the brink, the heads-together teamwork of union and management employees—former natural enemies—got things rolling in the right direction.

By Carol Hildebrand

A meeting
of the minds
31

SECOND OPINIONS: RISK MANAGEMENT **50**

Risky Business

The city of Sunnyvale, though a paragon of local government, still must be careful to manage risk, particularly those perils peculiar to its massive migration to a client/server platform.

By Peter Fabris

Governing
risk **50**

MORE ▶▶▶

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Computer Systems

CIO

The visionary and the technocrat **62**

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THE CIO ROLE **62**

The New IS Role Models

With information technology an increasingly intrinsic part of business operations, the role cast for senior IS executives is splintering, transmogrifying, regenerating. Now more than ever, there is no single CIO role but rather various models of IS organization and leadership.

By Anne Stuart

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MANAGEMENT REPORTING **24**

INSIGHTS: A REPORT CARD

Most management-reporting systems would receive less than a passing grade. The good news is that the typical problems are easy to address.

By Ido Millet

Making the grade **24**

The personal touch **70**

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STATE OF THE ART: ALTERED STATES

When off-the-shelf software products don't quite meet an organization's needs, customizing a package can be a good solution. The key is letting business requirements drive the decision—and handling the code with care.

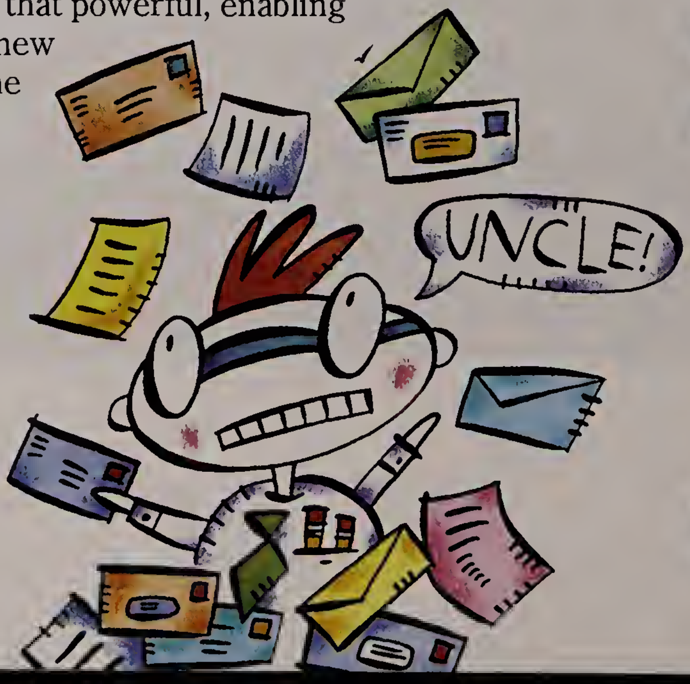
By John Edwards

PUNDIT IN RESIDENCE **80**

CIO LIGHT: THE TECHNOLOGY TEASE

It's time to bring the wheels of change to a grinding halt, and that means you can forget all that powerful, enabling technology. As Ezra's brand-new consultancy can show you, the power of suggestion is your new best friend.

By Ezra Poundcake



Ask, then they shall receive **14**

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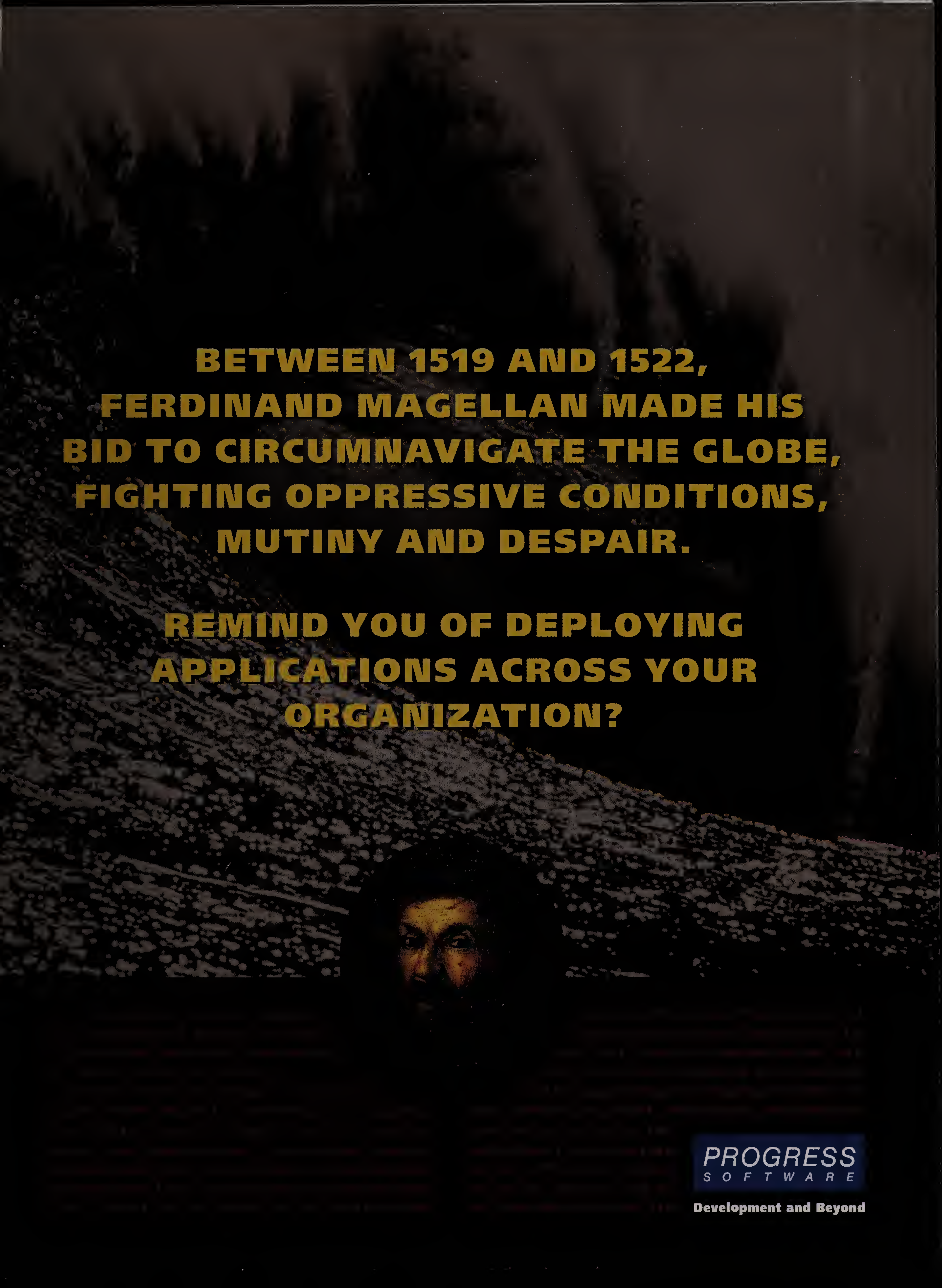
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REMIND YOU OF DEPLOYING
APPLICATIONS ACROSS YOUR
ORGANIZATION?
PROGRESS
SOFTWARE
Development and Beyond

PHOTO BY WEBB CHAPPELL

"Why does it take so long?"

If you haven't yet heard that question from frustrated end users or an impatient CEO, you soon may. The common complaint is that application development and deployment take too long. Business cycles and consumer product life cycles grow shorter, yet the application of technology to new product development is not keeping pace. As a result, competitive advantage is lost.

Frustration with perceived IS sluggishness may explain why the average tenure for a CIO today is 18 to 24 months, according to a leading executive search firm.

But let's face it. Keeping abreast of complex emerging technologies, aligning IS resources with strategic business goals, managing rising IT investments and expanding systems globally would be enough work for two IS executives. In fact, that division of labor is already underway.

Senior Writer Anne Stuart reports that some companies are implementing new IS leadership and organizational models that split IS management into two or more parts. For example, some of today's CIOs concentrate on strategic business considerations but offload day-to-day challenges of IS infrastructure and operations to newly hired chief technology architects. In "The New IS Role Models," which starts on Page 62, Stuart explores this and other IS organizational models that are beginning to appear in corporations.

The large-company model of split IT functions does not hold in small organizations where CIOs are rare, staffs small, budgets tight and resources strained. But free of internal hierarchies and bureaucracies, small companies have demonstrated that they can improve customer service, tweak product mixes, reduce turnaround times, accelerate deliveries and build custom products on the fly. Low-cost, high-powered PCs allow a $150 million company to tap the same powerful applications as an organization 10 times its size.

Senior Writer Megan Santosus found that IT is leveraged to the hilt in smaller companies where survival means seizing opportunities and exploiting niches fast. (Please see "Pumping Up the Volume," beginning on Page 38.) In fact, speed is what enables small companies to hold their own against the Goliaths of business. Santosus profiles three companies with revenues under $150 million; their stories prove that small organizations, armed with IT, can compete successfully with much larger competitors.

"Why does it take so long?" is one question rarely heard in small business today.

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CIO

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Application Form

Enterprise Value Awards For 1995

Honoring executives who craft innovative information technology solutions to enhance business value

Sponsored by CIO Communications Inc.

APPLICATION DEADLINE: JULY 1, 1995

The Enterprise Value Awards℠

Honoring executives who craft innovative information technology solutions to enhance business value

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CRITERIA

Winners will be chosen by a panel of independent judges from among entrants who have submitted completed application forms to CIO by July 1, 1995. Entries will be judged on the following criteria:

- The extent to which the system adds business value in furthering the organization's strategic objectives
- The measurable financial return the system provides to the organization
- The extent to which IT was key to achieving the overall business solution—the "couldn't have done it without technology" factor
- The quality of collaboration between the business unit and IS organization that is achieved throughout the course of the project

All finalists will be subject to an in-depth analysis of the nominated system (to be performed by CIO or its agents). This analysis, which may require a site visit, will be based on interviews with sponsoring executives and system users, and will be designed to substantiate all claimed benefits. Notification of winners will occur on or about Oct. 16, 1995. CIO reserves the right to publish relevant cost and savings figures that establish the claimed ROI of the system; *the willingness to divulge this information for publication is a condition of entry.*

DEFINING VALUE

We invite applicants to consider the broadest possible spectrum of enterprise value. The following list of IT-enabled benefits is intended to help guide applicants' thinking:

- new, innovative and more productive ways of doing business;
- revamped organizational structures or styles of performing the work of the enterprise;
- the ability of the enterprise to enter a new market;
- successful global operation or expansion;
- transformation of the way the enterprise competes within its customary market or that alter the terms of competition within the market;
- improvement of the enterprise's relationships with its external customers;
- improvement of the enterprise's relationships with its own employees or among its functions (such as marketing, finance or human resources);
- the ability of the enterprise to compete more effectively by adding to the sum of its available knowledge assets;
- leaner and more economical operations.

ENTRY GUIDELINES

- The system must have been operational prior to July 1, 1993.
- Entrants must agree to be featured, along with their system and organization, in a *CIO* article.
- Entries must be complete.
- Entries must be on 8.5x11-inch paper, one side per sheet.
- The application form may be reproduced.
- Multiple entries from one company will be considered, but each entry must be submitted separately.
- Entries must be made jointly by the IS executive AND the business sponsor for whom the system delivers value.
- IT vendors, public-relations and advertising firms, consultants and other third parties may NOT apply on behalf of another firm. They are encouraged to forward this form to the "owner" of the system, or to contact CIO Communications to recommend that an application form be sent to their client.
- All entries must be computer-generated or typed; no handwritten entries will be accepted.
- When feasible, an additional copy of the entry should be sent on a 3½ -inch disk. Electronic entries must be limited to word-processing and spreadsheet packages that are compatible with Microsoft Word and Microsoft Excel on an IBM or Macintosh platform.

1. COMPANY/BUSINESS UNIT

▲ NAME OF PARENT COMPANY

CITY, STATE WHERE HEADQUARTERED

PUBLICLY HELD? PRIVATELY HELD?

ANNUAL REVENUES

INDUSTRY

NAME OF BUSINESS UNIT OR ORGANIZATION

CITY, STATE WHERE LOCATED

NUMBER OF EMPLOYEES AT BUSINESS UNIT

2. ENTRANTS

A.

▲ NAME OF ENTERING I.S. EXECUTIVE

TITLE

NAME OF DIVISION, DEPARTMENT OR UNIT

ADDRESS

CITY

STATE ZIP

( ) ( )
TELEPHONE FAX

B.

▲ NAME OF ENTERING BUSINESS-UNIT EXECUTIVE

TITLE

NAME OF DIVISION, DEPARTMENT OR UNIT

ADDRESS

CITY

STATE ZIP

( ) ( )
TELEPHONE FAX

3. SUPPORTERS

Please list four people who are willing to be interviewed with regard to the system, its development, its use and the value returned. At least one should be a member of the technology team that developed the system and should have played a significant role. At least one should be a primary user from the sponsoring business unit. The other two may be from either organization or represent suppliers, customers or others intimately familiar with the system.

A.

▲ NAME

TITLE

( ) ( )
TELEPHONE FAX

REASON FOR INCLUSION

B.

▲ NAME

TITLE

( ) ( )
TELEPHONE FAX

REASON FOR INCLUSION

C.

▲ NAME

TITLE

( ) ( )
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D.

▲ NAME

TITLE

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JULY 1, 1995

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4. THE NOMINATED ORGANIZATION

Please tell us about your organization (company, business unit, agency) in 500 words or less. Include information on:

- when the organization was founded;
- mission statement;
- major products and services;
- markets served;
- any other data you believe to be relevant in terms of general background.

5. THE NOMINATED SYSTEM

Tell us about the nominated system and demonstrate its importance to the organization by completing the following sections. Please limit your material to five pages.

- **OBJECTIVE:** Identify the primary business objectives of the IT investment.

- **SCOPE AND IMPACT:** Identify the functions (e.g., customer service, manufacturing, planning) that were changed by the system, the nature of those changes and their impact on the business. Identify other business-change initiatives tied to the IT investment.

- **ADDED BUSINESS VALUE:** Describe how the technology investment is furthering the organization's strategic objectives, including any new business initiatives. Note any significant event that would help us evaluate the nominated system's value. Examples might include a merger, a new distribution channel or a significant regulatory change.

- **THE IMPORTANCE OF IT:** Identify the different components of the overall business change (e.g., business reengineering, downsizing, cycle times). Explain the importance of the IT component to the overall business change. Could the results have been achieved without IT?

- **COLLABORATION:** Describe how the business unit and IS organization worked together throughout the project—from concept to implementation. What were the specific tasks fulfilled by the business unit? IS organization?

6. QUANTIFYING ROI

Please provide a detailed summary of the nominated system's investment costs (including all up-front development expenses and annual maintenance charges) and its ROI to date. Include reasonable estimates of indirect and /or "soft" benefits.

7. TECHNICAL PROFILE

Briefly describe the technology of the nominated system. Please include the names of major vendors and products. If you prefer, you may attach a document containing a technical description of the system, providing it is no more than five pages.

NOTE: The examples provided here are meant to be illustrative, not all-inclusive:

- Architecture (e.g., client/server, distributed, mainframe)
- Hardware (e.g., mainframe/parallel processor, minicomputer/server, desktop computers, handheld/portable devices)
- Software (e.g., operating systems, database system, shells, application software)
- Software development tools (e.g., CASE, 4GLs, GUI developers, object-oriented development tools)
- Networking/communications hardware, software and services (e.g., modems, routers, electronic-mail packages, carriers and public networks)

8. TRUTH OF INFORMATION/RELEASE

The following release must be signed by both nominating executives if the application is to be considered. *Unsigned releases will invalidate the entry.*

I HEREBY STATE that the information provided is true and complete to the best of my knowledge and belief.

I AUTHORIZE the release and use of, in connection with the Enterprise Value Awards program, any and all materials furnished by me or others at the company contacted for this judging. I understand that information submitted on this application or subsequently gathered during the evaluation and judging process may be used in articles or any other type of publicity relating to the Enterprise Value Awards program.

I ALSO AUTHORIZE the release and use of my name, my company's name and my likeness, including but not limited to any photographs and any recording of my voice or image that may be taken of me for *CIO* Magazine. I agree that no compensation shall be due me or my company for such usage.

I RECOGNIZE that failure to meet these conditions or to provide sufficient material that can be published can cause the application to be rejected at any point in the process at the sole discretion of the sponsors.

1. ______________________________

▲ SIGNATURE OF NOMINATING I.S. EXECUTIVE

____

DATE

2. ______________________________

▲ SIGNATURE OF NOMINATING BUSINESS EXECUTIVE

____

DATE

9. OTHER EDITORIAL OPPORTUNITIES

If you are not selected as an award recipient, are you willing to be contacted for inclusion in other articles in *CIO* Magazine? **YES** ☐ **NO** ☐

How did you learn about the Enterprise Value Awards program?

- ☐ *CIO* MAGAZINE
- ☐ CONSULTANT
- ☐ SYSTEMS INTEGRATOR
- ☐ PR AGENCY
- ☐ ADVERTISING AGENCY
- ☐ ACADEMICIAN
- ☐ IS STAFF MEMBER
- ☐ OTHER PUBLICATIONS
- ☐ VENDOR
- ☐ OTHER (PLEASE IDENTIFY) ______________

CHECKLIST

HAVE YOU FILLED OUT...?

- ☐ Company/Business-Unit, Entrants and Supporters Information

HAVE YOU INCLUDED ON SEPARATE PAGES...?

- ☐ Nominated Organization
- ☐ Nominated System
- ☐ Technical Profile
- ☐ Additional Return on Investment Material

HAVE BOTH ENTRANTS SIGNED AND DATED...?

- ☐ Truth of Information/Release

HAVE YOU CHECKED OFF...?

- ☐ Other Editorial Opportunities
- ☐ How you learned about the Enterprise Value Awards program?

Finally, an award for information technology that recognizes people and their organizations.

MOST AWARD PROGRAMS recognize “Best Product” or “Most Innovative System.” How about rewarding the strategists who take those products or systems and make them work to their best potential? They really deserve the credit.

As an IT or business executive who has built or utilized an information technology system that delivers both demonstrable ROI and strategic value to your organization, you deserve recognition and praise. CIO has created the Enterprise Value Awards to honor the architects of innovative IT solutions and in doing so, hopes to inspire others in their search for enterprise value.

ENTERPRISE VALUE AWARDS TIMELINE

APPLICATION DEADLINE: July 1, 1995

JUDGES SELECT WINNERS: October 1995

ANNOUNCEMENT OF WINNERS: October 16, 1995

AWARDS CEREMONY: February 6, 1996 at the *CIO* Enterprise Value Summit

DO YOU QUALIFY FOR AN ENTERPRISE VALUE AWARD? THREE CRITERIA ARE ESSENTIAL...

1. The pervasiveness of information technology —in other words, the strategic objective could not have been met without IT’s contribution
2. A return of value to the enterprise (see Defining Value within this application form)
3. A partnership between an IT and business executive

If your innovative solution meets the above criteria, please fill out this Enterprise Value Awards application form. The February 1, 1996 issue of *CIO* will feature profiles of the winning organizations and the executives who have proven their strategic technology investments have had a positive and sustained impact on enterprise value.

On February 6, 1996 CIO will host a special awards ceremony honoring the winners at the annual *CIO* Enterprise Value Summit. If you would like to learn more about the *CIO* Enterprise Value Awards program, please call Tracey Grogan at (508) 935-4449.

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Comptroller

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of Corporate Information Systems

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Divisional Vice President
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> *"If CIOs find themselves in a service trap, a way to call attention to technology's implicit part in business strategy is to lay out a business case for the Internet."*
>
> *–Larry Burden*
> *Senior Vice President of Information*
> *Services and Strategies*
> *Freddie Mac*

In December 1994, we published a special issue entitled "A CIO's Guide To The Information Highway." The response was incredible. And a seed was planted.

When our executive editor, Lew McCreary, approached me in late December, the idea had begun to germinate. Lew was convinced that CIOs and senior-level management were ready to embrace the technology of the information superhighway but did not have a resource that addressed their concerns. Although countless Internet-related magazines were cropping up on the newsstands, not one spoke to the business executive about business concerns.

Until now, that is. This summer, CIO Communications will begin publication of a regular supplement to *CIO* Magazine, aptly dubbed *WebMaster*. *WebMaster*'s mission: to deliver solutions-oriented information that will enable senior management and webmasters to effectively exploit the Internet for business value and profit. Case studies that explore successful and unsuccessful applications; interviews with prominent webmasters; stories that address corporate concerns, such as standardization and ROI; columns addressing legal, regulatory and security issues; how-to strategies; and information on new products and services will all appear in *WebMaster*.

In the near future, the World Wide Web will become the single common interface for worldwide communications and business conduct, integrating voice, data, video and other digital media. You are in the enviable position to lead the charge. I urge you to take full advantage of this new paradigm.

P.S. Get the recognition you deserve. The Enterprise Value Awards program is open to any IT- and business-executive team that has enhanced business value through an innovative application of information technology. An application form is bound within this issue (following Page 8).

PHOTO BY WEBB CHAPPELL

Coming In CIO

Legal Systems

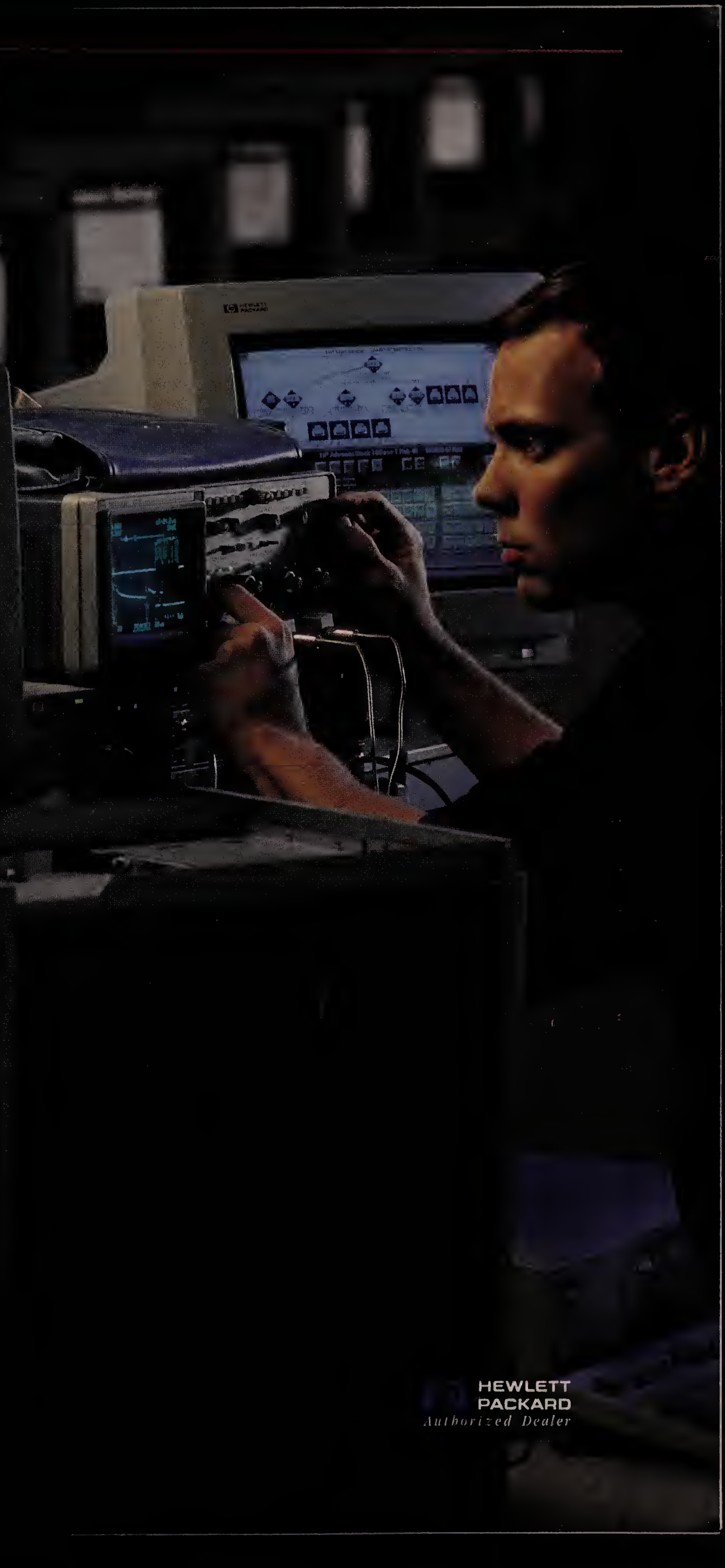
The legal profession has long been a holdout in the use of technology, but all that is changing. In addition to productivity-enhancing tools, lawyers are using such technologies as groupware, document management, online databases, imaging, expert systems and videoconferencing to manage and research their cases.

The Down Side

After struggling for a generation to make colleagues aware of the crucial role IT can play in the success of a business, CIOs must now face the consequences of having proved their point. Systems must not fail—but if they do, customers expect them to be brought back online immediately. *CIO* explores how companies are coming to terms with the inevitability of downtime and calculating the ensuing cost.

Signs of Support

Software support is changing. Vendors that used to offer free support are now charging for it as an add-on. Some vendors offer to support other vendors' software as well as their own. There is also a trend toward third-party software support, in which companies that don't make or even sell software are selling support services. *CIO* will take a look at the developments in this area and try to gauge how well they're working.



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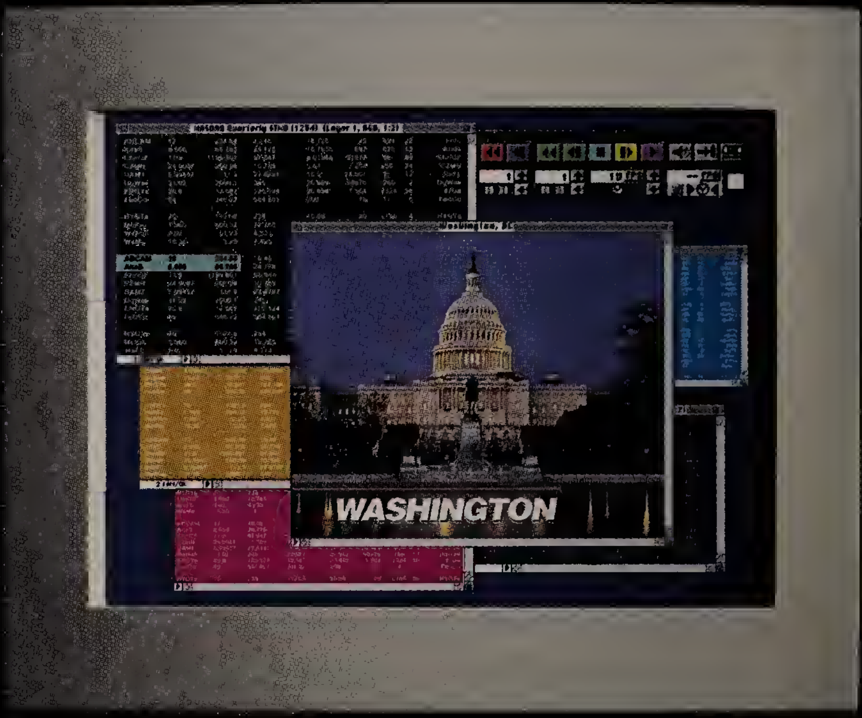

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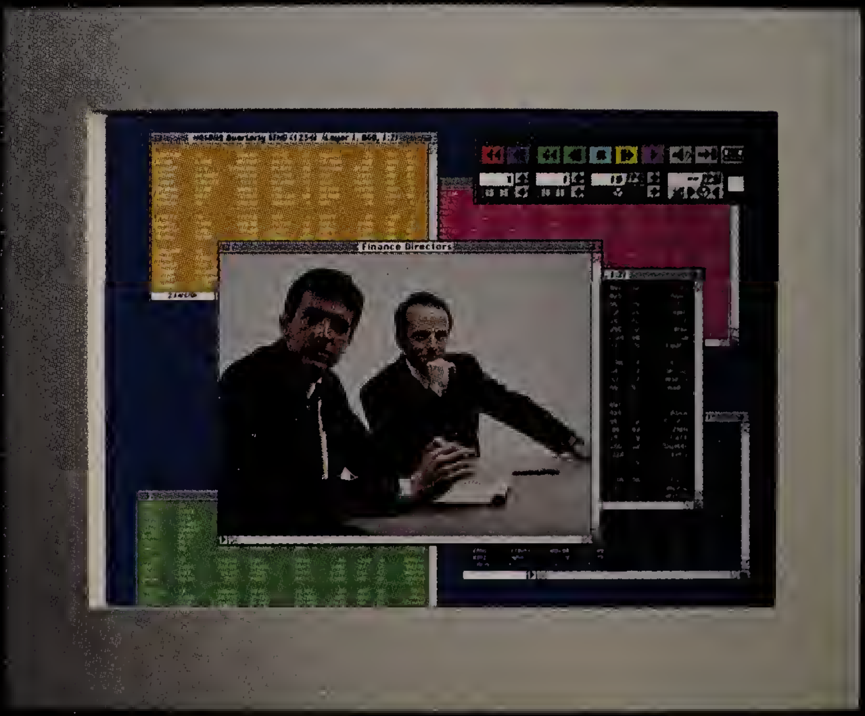

Imagine you're the MIS Director of a major Wall Street brokerage house. You know that your firm depends on instant access to ever-changing market information. Even minutes of downtime can cost the firm multi-millions in lost transactions. Make you nervous?

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TRENDLINES

I.T. IN EASTERN EUROPE

CAPITALISM GAINS

The fall of communism in Central and Eastern Europe was good news for many people, and information executives are no exception. According to a recent survey by Deloitte Touche Tohmatsu International, the area has since become fertile ground for the CIO profession.

In the first survey of its kind in the region, Deloitte interviewed 1,000 executives from a wide range of businesses in Bulgaria, the Czech Republic, Hungary, Poland, Romania, the Slovak Republic and Slovenia. Nearly three-fifths of the organizations have appointed IT directors or managers, and those executives have greater authority than ever to spend money on technology. Nearly three-quarters of the companies surveyed have established IT departments.

"The response indicates the high degree of interest in computer technology among executives in Central and Eastern Europe," says William Atkins, leader of IT consulting for Deloitte Touche in Atlanta. These executives "are anxious to make up for more than 40 years of central planning that greatly limited the ability of businesses to grow and prosper with the rest of the world," he adds.

Although one-fourth of the respondents said their computer hardware and software are not fully meeting their needs, limited funds are available to upgrade the IT infrastructure. As a result, it may be some time before businesses in these countries emerge from the technological Dark Ages.

Companies in Eastern and Central Europe will take three to five years to approach the IT sophistication of the West, says Richard Sterbanz, international partner for the region at Deloitte Touche based in Warsaw, Poland. "It's critical that they modernize their IT because their competition is the West," he says. Although difficulty raising capital and a spotty telecommunications infrastructure are obstacles to overcome, the upside is that most companies do not have aging legacy systems to replace. Most of these businesses rely on PCs due to prior government restrictions on more-expensive midrange and mainframe computers and to technology embargoes imposed by the West before the fall of the Iron Curtain.

Despite the dearth of modern equipment, the level of technological expertise is quite high, Sterbanz says. Because of the trade restrictions, Eastern Europeans were forced to build or clone computers and develop operating

FAX TO GO

A pocket-sized fax viewer currently being tested allows you to read faxes from anywhere you can be reached by phone, according to a recent article in *Popular Science*. Messages are received via cellular phone and modem and are displayed on a magnified LED. The product is expected to be widely available in summer 1995.

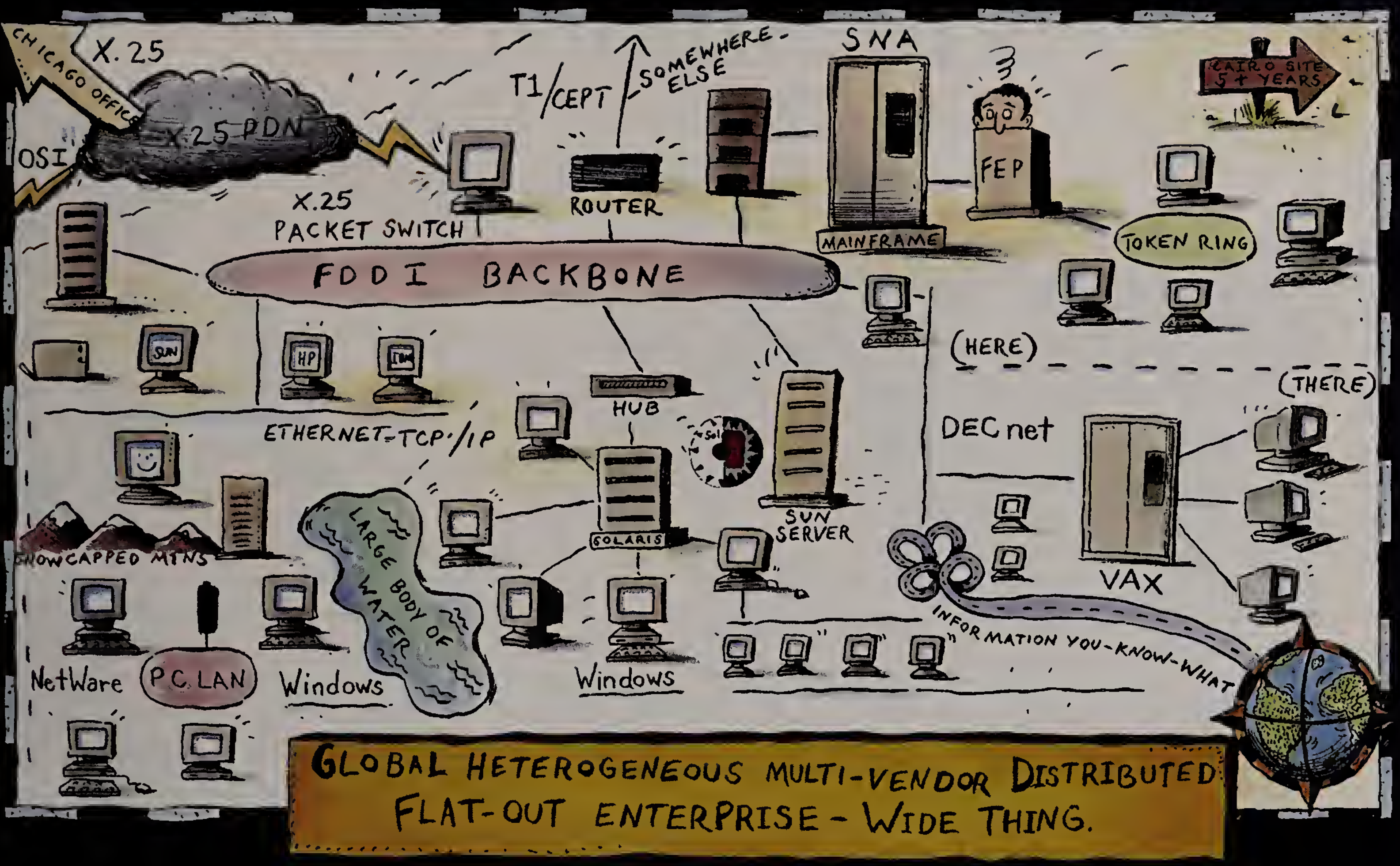
WHEN SMALL REALLY IS BEAUTIFUL

Think of your typical image file as Dorian Gray, and a compressed version thereof as his portrait. Using most current compression technologies, the comparison is not too far off—the more you compress the file, the less resemblance it bears to its original beautiful self.

Well despair no more—a new technology can compress still images by at least 30-to-1 without any visible loss in clarity, according to the company that created it. If they're black and white, that goes up to 100-to-1. HARC-C, developed by the Houston Advanced Research Center, is a new technique that uses wavelet algorithm software to achieve very large compression ratios while maintaining excellent quality. It can be used on both still and video images, requires no specialized equipment and exceeds the JPEG and MPEG industry standards. The result? Images can be packed into a smaller space, thereby reducing the costs of storage and transmission.

HARC-C's developers list archiving, interactive communications and on-demand entertainment services as likely applications.

For information, call 713 367-1348.



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systems. However, there is a lack of expertise in application software and especially in general business practices. "Many [programmers] don't know what a spreadsheet is," Sterbanz says.

Eastern and Central European companies are eager to change past management practices by giving managers more spending authority and relying more on consultants to provide expertise. Just under half of IT executives there have some control over their budgets, and more than 12 percent have the authority to spend more than $50,000—something most view as an astounding reversal of some 40 years of restrictive business practices under communist rule.

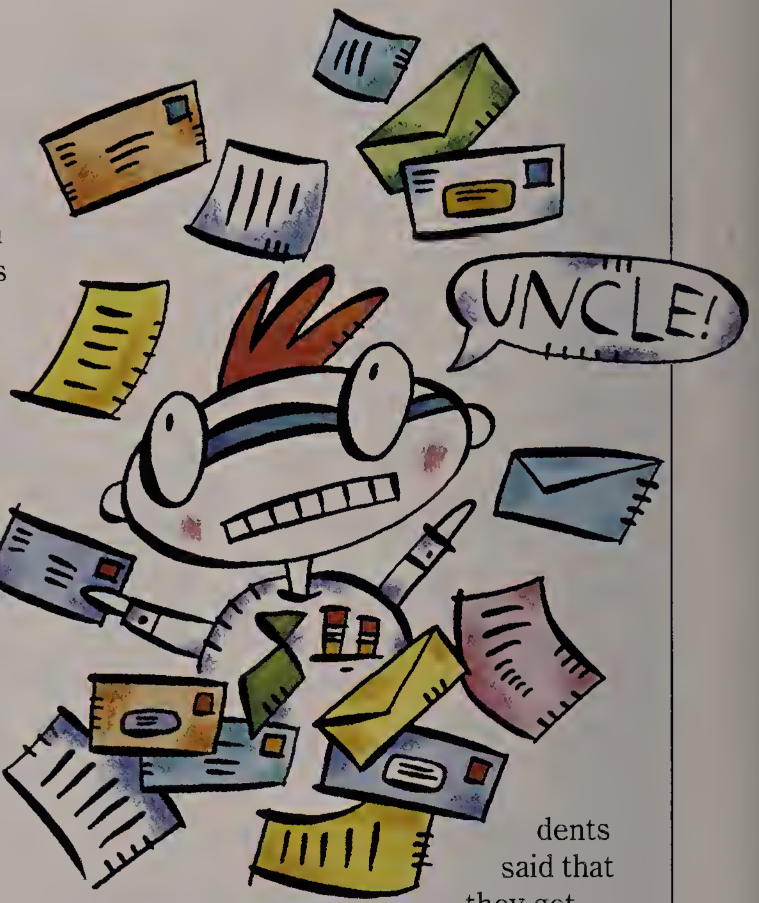
To obtain a copy of the report, call Deloitte Touche at 404 220-1050.

–Peter Fabris

MARKETING INFORMATION

THE AGE OF CONSENT

As marketing intersects with technology, companies are amassing increasingly complex databases of information about their customers, which turns out to be one of those good news/bad news scenarios. First, the good news. Marketers use the detailed information to better target their campaigns, so consumers get less junk mail; what they do get speaks directly to their interests. But better marketing turns into a bad news privacy bugbear when marketers (or just about any plugged-in person) use "data mining" to pull together information as mundane as an address—or as personal as a record of criminal charges. The issue has raised debate among privacy advocates, who say that consumers are growing more concerned about who knows what about them.



But according to a survey by MasterCard International Inc. and Yankelovich Partners Inc., customers don't want to forgo the benefits of well-targeted marketing. (About one-third of respondents said that they get more-accurately targeted information as a result.) What they really want is to give permission as to how information about them is used.

Helene Graff, MasterCard's vice president of customer satisfaction and service in New York, says that consumers cite being asked for permission as by far the most important factor in allowing organizations to use personal data. "They need to have a mechanism to have a choice," she says. While most consumers will rarely exercise that option, "they want an ability to opt out."

Of the 500 people surveyed, 90 percent said that they should be consulted before any personal or family-related information is made available to third parties. This is important to companies like MasterCard that traffic heavily in consumer information.

However, Graff also sees an opportunity for a competitive edge. Her company is testing the idea of not only first asking permission to sell personal information to third parties but also offering incentives, such as discounts

ILLUSTRATION BY MARYANNE LLOYD; CHART BY LINDA GOLON

TAKING TO TASKS

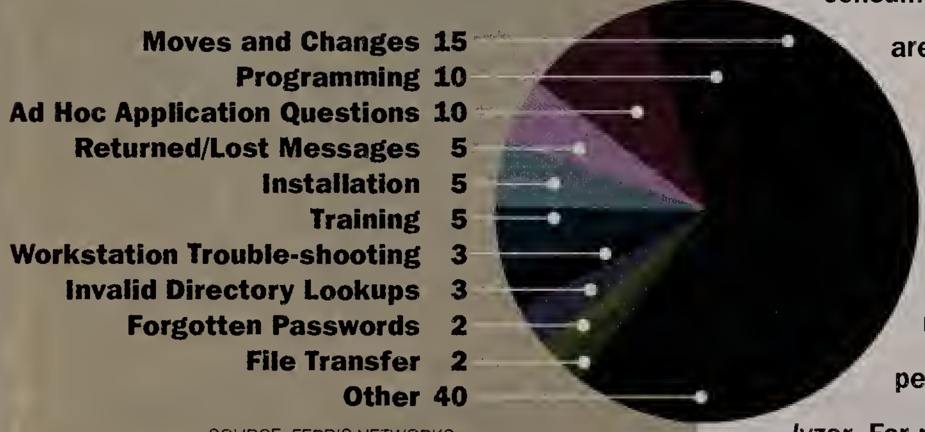
For technical-support groups, newly installed systems generally represent something of an unknown: Even if the technology involved is similar to that in existing systems, predicting what will perplex users can be difficult.

But if the new technology in question involves messaging, support groups can take heart: In a recent report, San Francisco-based messaging research firm Ferris Networks provides a list of more than 300 tasks in 40 categories that are required to support a messaging environment. Among the big consumers of support groups' time are programming, ad-hoc application questions, and moves and changes, according to the report.

Ferris also publishes a monthly series of white papers, called *Ferris E-Mail Analyzer*. For more information, call 415 986-1414.

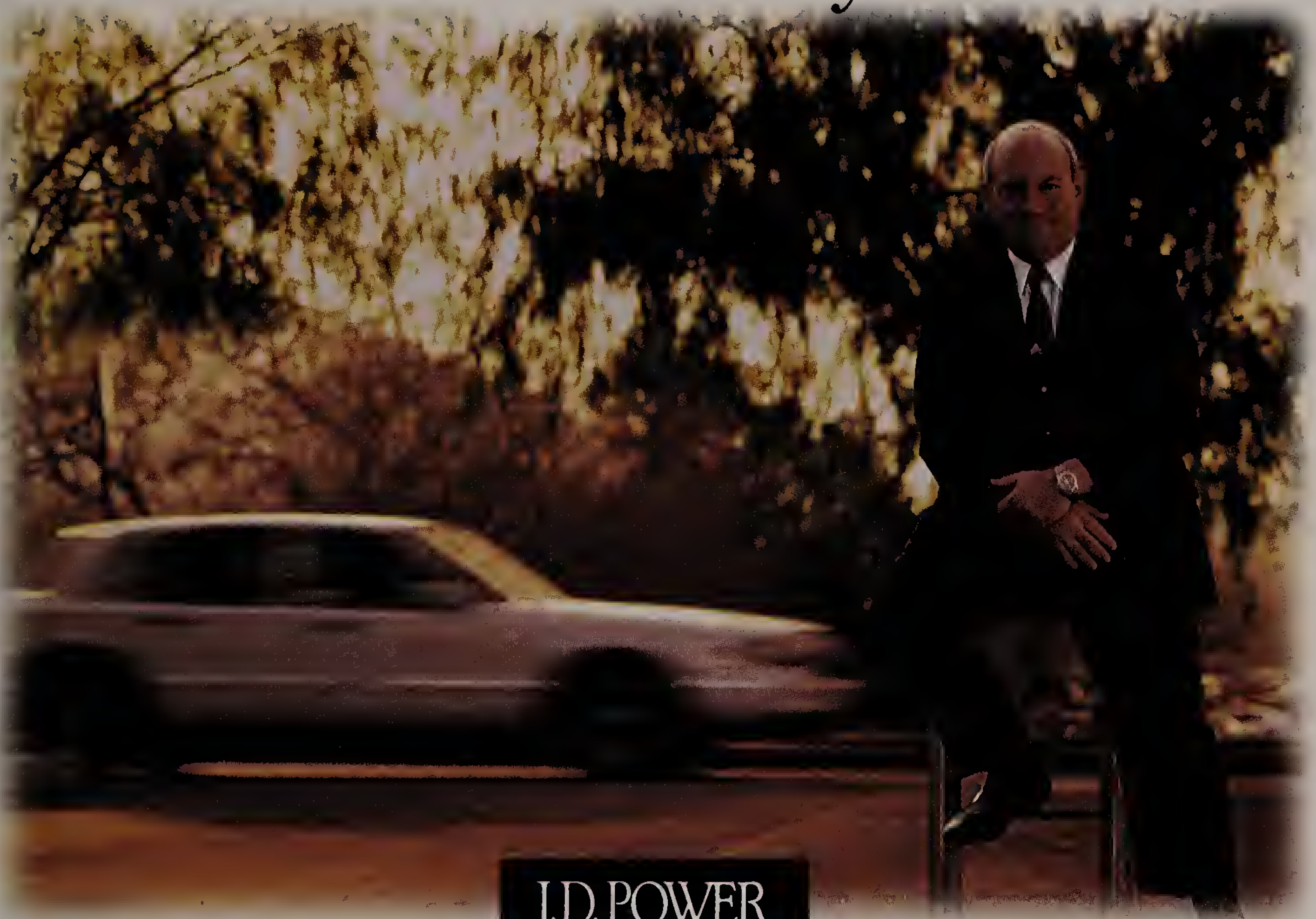
Messaging Support

The following is a typical mix of the tasks required to support a messaging environment, rated by percentage of total messaging-support time.



SOURCE: FERRIS NETWORKS

J.D. Power and Associates Drives Decisions with the SAS® System



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Will the cars on the drawing board today meet consumer demands of tomorrow? That's the question facing J.D. Power and Associates. The answers are coming from the SAS System.

"We produce a monthly forecast of car and truck sales for about 300 different vehicles," says Jon Rosenthal, Manager of Automotive Forecasting for J.D. Power and Associates. "Each vehicle is forecasted by month for five years beyond the current year. Right now I'm forecasting through the year 2000."

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"The SAS System is the fuel behind those forecasts...our software of choice for analyzing sales, economic, and auto industry data and then reporting what we've learned," adds Rosenthal. "Before the SAS System, much of the forecasting was done by hand. To make our forecasts credible, we had to have a credible system. One that made it easy to build applications and put them to work across our computing environments. We've got minis, Macs, desktop publishing, and a lot of spreadsheets. The SAS System fits the way we do business."

The Bottom Line is Information

Now that the forecasting model is up and running, Rosenthal and his staff are using the SAS System to build an interactive database. "The Power Information Network will allow an auto dealer or manufacturer to go online and get market information," Rosenthal explains. "When released, subscribers will be able to select from a long menu of reports and data. The versatility of the SAS System is crucial in developing the reports."

"The bottom line is this: applications are being developed with the SAS System that will deliver the most up-to-date information to those who make decisions for the automotive industry," says Rosenthal. "If manufacturers and dealers can get their hands on accurate market information and predictions, they have a much better chance of meeting customers' needs down the road."

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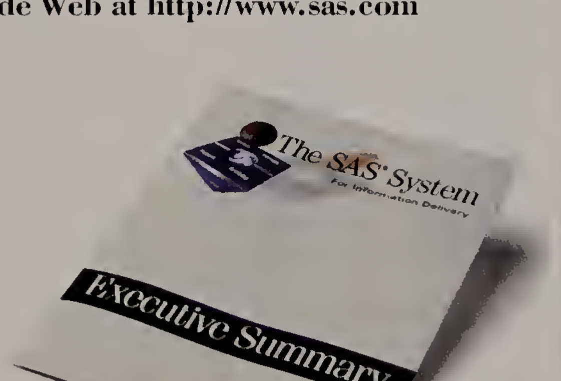

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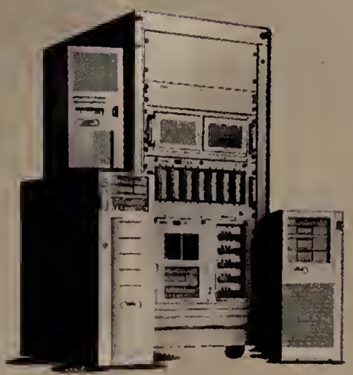

People are born with one. Businesses have to build them from scratch. To help you assemble the most reliable information backbone, Compaq announces a new generation of servers. They're all designed to faithfully serve the demands of workgroups and departments — from the expandable ProSignia line to the business-critical ProLiant family (with up to four Pentium processors). And they're all engineered to do what every

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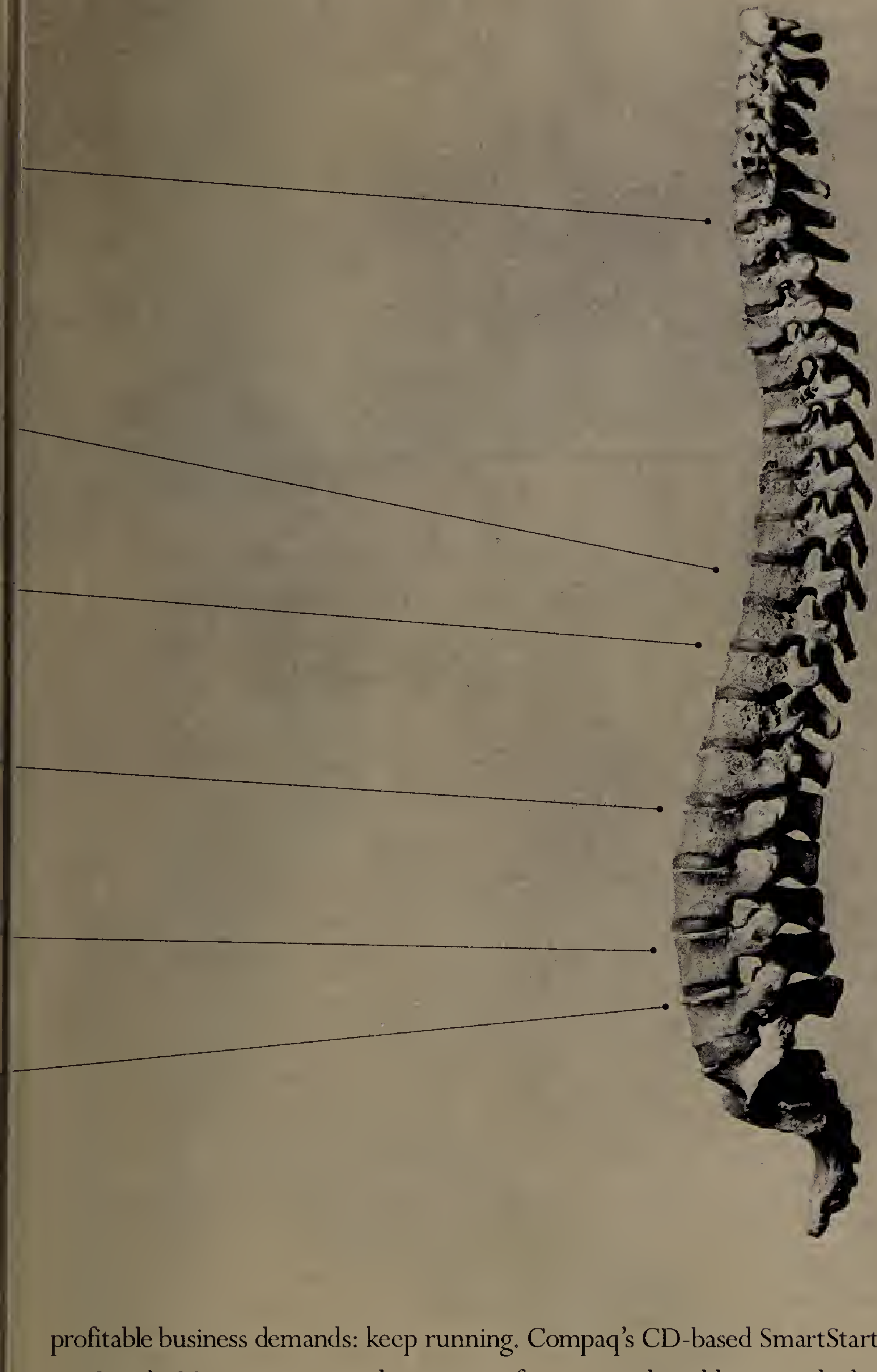

Fig. 1 Backbone

profitable business demands: keep running. Compaq's CD-based SmartStart ensures a smooth, integrated installation, and our Insight Manager constantly monitors for potential problems—which, if encountered, are covered by the Compaq Pre-Failure Warranty. For more information, call 1-800-853-9518 or visit our Web site at www.compaq.com. We can help you get the performance you need. As well as the support.

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TRENDLINES

or better protection against fraud, in return for permission to use the data. "By respecting customers' information and involving them in the information-gathering process, companies can achieve greater customer loyalty and increased patronage," Graff says. "Companies wanting to increase business need to take these steps."

–*Carol Hildebrand*

THE HYPE REPORT

While hype plays some role in most discussions of emerging technologies, sometimes it seems to have the starring part. Take the case of multimedia. According to a recent article in *The Wall Street Journal*, PC Data Inc. estimates that the number of CD-ROM titles reached 2,057 by the end of 1994, up from only 197 two years before. But sales aren't exactly going through the roof: 20 percent of those titles sold fewer than 11 copies in December 1994, and 90 titles sold only one copy. Furthermore, in a survey of 912 multimedia-software developers, consulting firm Gistics Inc. found that 96 percent were unprofitable, *The Wall Street Journal* reported. Interactive TV is in a similar situation. "Interactive television doesn't really exist, and people got carried away with the potential of it," Geoffrey

THEY CAN'T ANSWER MY QUESTIONS; BUT GIVE THEM AN A FOR ATTENDANCE

There are many ways to gauge how well an organization is doing, but asking customers is the ultimate test. So it is for help desk operations: Myriad statistics may reveal how many calls they take or how quickly they take them, but customers are the final judges of their success.

With that in mind, The Bentley Co. recently announced the Help Desk Quality Report Card, which it is marketing jointly with the Help Desk Institute. The survey is designed to help organizations quickly and cost-effectively measure the quality of their help desk operations, identify areas of weakness and develop an action plan for improvement. Using it, companies can collect customer input on issues critical to help desk success, including call handling, ability to resolve problems and availability of support tools. The Quality Report Card also identifies trends by tracking whether customers' satisfaction has increased, decreased or stayed the same over time.

Survey results are compiled by The Bentley Co., which is based in Hudson, Mass., and are delivered in a comprehensive, easy-to-understand package. Call 508 562-4200. ■

CAREER MOVES

Entex Information Services Inc. recently named LYNN S. WILSON to the position of vice president of information technology and chief information officer. Wilson is responsible for directing the IT strategy at Entex, a provider of PC and network solutions to Fortune 1000 companies.

ROBERT McLENDON was recently appointed president of the Texas Instruments Software business. McLendon has been employed with TI since 1966, most recently as chief information officer. Replacing McLendon is JODIE N. RAY as CIO and manager of the Information Systems & Services Division. The IS&S Division is responsible for the strategic planning and deployment of information systems and telecommunications for TI's worldwide organizations.

Lincoln National Life Insurance Co. has named MICHAEL L. WRIGHT senior vice president and chief information officer. Wright is responsible for information technology, business systems development, telecommunications, data-center operations, computer equipment and software acquisition for the Fort Wayne, Ind., company.

Becton Dickinson and Co. has named ALFRED J. BATTAGLIA to the new position of group president, chief information officer. Battaglia is responsible for managing the accelerated development of global information systems for the corporation and for the development of enhanced supply-chain management programs outside of the United States. ■

ILLUSTRATION TOP BY MARYANNE LLOYD; ILLUSTRATION BOTTOM BY TONY STONE/STUART MCCLYMONT

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Darby, president of Viacom Interactive Services, told *Broadcasting & Cable* magazine. He said it will be 1998 or later before a viable market exists.

A PERFECT UNION

In the April 1, 1995, issue of *CIO*, we wrote about Document Enabled Networking (DEN) and the Shamrock Document Management Coalition (see "The Virtues of Virtual Documents," Page 32). Since then, the corporate founders of the two document-management standards initiatives—IBM Corp., Novell Inc., Saros Corp. and Xerox Corp.—announced that the groups have merged.

The resulting Document Management Alliance (DMA) is organized as a task force under the Association for Information and Image Management (AIIM). Its mission is to deliver industry specifications to provide universal interoperability among all document-management applications, services and repositories. The founders said they intend to provide the DMA specification to vendors, developers, resellers and corporate users in July 1995.

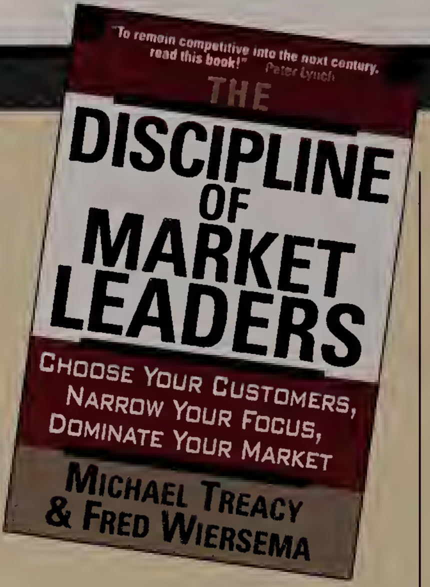
For information about DMA membership, call 301 587-8202, Ext. 607.

OFF THE SHELF

THE DISCIPLINE OF MARKET LEADERS

CHOOSE YOUR CUSTOMERS, NARROW YOUR FOCUS, DOMINATE YOUR MARKET

By Michael Treacy and Fred Wiersema
Addison-Wesley Publishing Co. (Reading, Mass.), 1995
208 pages, $25


"To remain competitive into the next century, read this book!" Peter Lynch
THE
DISCIPLINE OF MARKET LEADERS
CHOOSE YOUR CUSTOMERS, NARROW YOUR FOCUS, DOMINATE YOUR MARKET
MICHAEL TREACY & FRED WIERSEMA

There's an old Swahili proverb that cautions, "To the person who seizes two things, one always slips from his grasp." If only Michael Treacy and Fred Wiersema could have said it so succinctly.

In *The Discipline of Market Leaders*, Treacy and Wiersema stress the importance of remaining focused in corporate strategy setting and warn of the dangers of straying from that focus. As an example, they cite the success of Henry Ford and his famous promise to give customers a car in "any color as long as it's black." Because Ford focused on a single purpose—offering an acceptable product at the lowest possible price—he won the hearts and dollars of countless like-minded customers. The lesson: Trying to be all things to all customers is a recipe for disaster—or, at best, mediocrity.

The first step on the way to market leadership, Treacy and Wiersema contend, is to think solely about customers. Begin by defining who your organization's customers are and what they want, and then focus, focus, focus. Your business philosophy—and, thereby, your processes and priorities—will follow naturally.

While the idea of customer as king is not new, this book breathes life into the old axiom, albeit somewhat clumsily (readers must wade through much consultant-speak gibberish beckoning them to "excel in a specific dimension of value" or "build a well-tuned operating model" that eventually "creates the cult of the customer"). Drawing from five years of research with CSC Index and a study of 80 market-leading companies, Treacy and Wiersema identify three types of customers: those who put a premium on product performance; those who look for price and dependability; and those who most value personalized service and advice. Excel at serving customers in one of those areas and maintain acceptable levels of performance in the other two, and you're on your way to becoming a market leader, the authors promise.

They go on to examine examples of companies that excel in serving one of these types of customer. For instance, market mavericks such as Intel or Nike that continually redefine what is state of the art have customers who count on innovation and top product performance. Companies that choose to focus on price and dependability—Wal-Mart, for instance, or Federal Express—cater to customers who value guaranteed low prices and hassle-free service. Finally, companies such as Home Depot or Nordstrom, on the other hand, consider the long-term relationship with the customer, not just the profit or loss on a few transactions. Their customers look for a custom-fit solution rather than the best product or the best price.

It is by choosing which type of customer to focus on—and sticking to that choice—that market leaders manage to get where they are and stay ahead, Treacy and Wiersema argue.

In addition to pointing the way for readers, Treacy and Wiersema practice what they preach. *The Discipline of Market Leaders* is not meant for executives in search of yet another book about excellence, nor is it for reengineering zealots eager for something new in the "how to" genre of business bibles. Instead, the authors take sharp aim at business strategists concerned with their corporate raison d'être and fire off their message. And although their delivery stumbles, that message is worth receiving.

–Elaine M. Cummings

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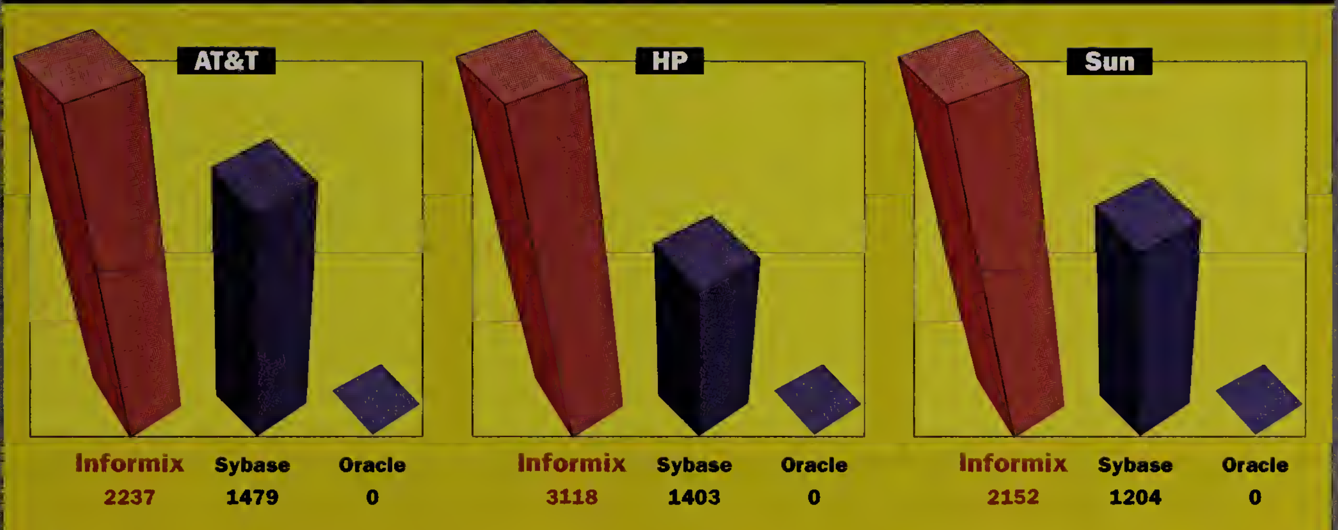

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A Report Card

Most management-reporting systems would receive less than a passing grade. The good news is that the typical problems are easy to address.

BY IDO MILLET

A common theme among speakers at the October 1994 CIO Perspectives conference was the "information imperative"—the failure of many organizations "to exploit the wealth of information within their own walls," and the need to focus more on information and less on technology (see "Information Imperative," *CIO*, Dec. 15, 1994/Jan. 1, 1995). These statements are right on the money, but what should you do in order to provide better information? Before you sign the check for a fuzzy-object, touch-oriented, logic-sensitive, super-galactic executive information system, it may be a good idea to stop and ask what is wrong with your current reports.

I recently conducted a study of 91 reports in 21 companies across a range of industries and found three major categories of problems: Many of the reports were badly formatted, inappropriately distributed or simply not needed. Forty-seven of the 91 reports (52 percent) suffered from formatting problems, making this by far the most common problem. In second place, 19 (21 percent) had distribution and frequency problems. In close third, 18 of the reports (20 percent) were unnecessary. No wonder so many managers complain about poor information and information overload.

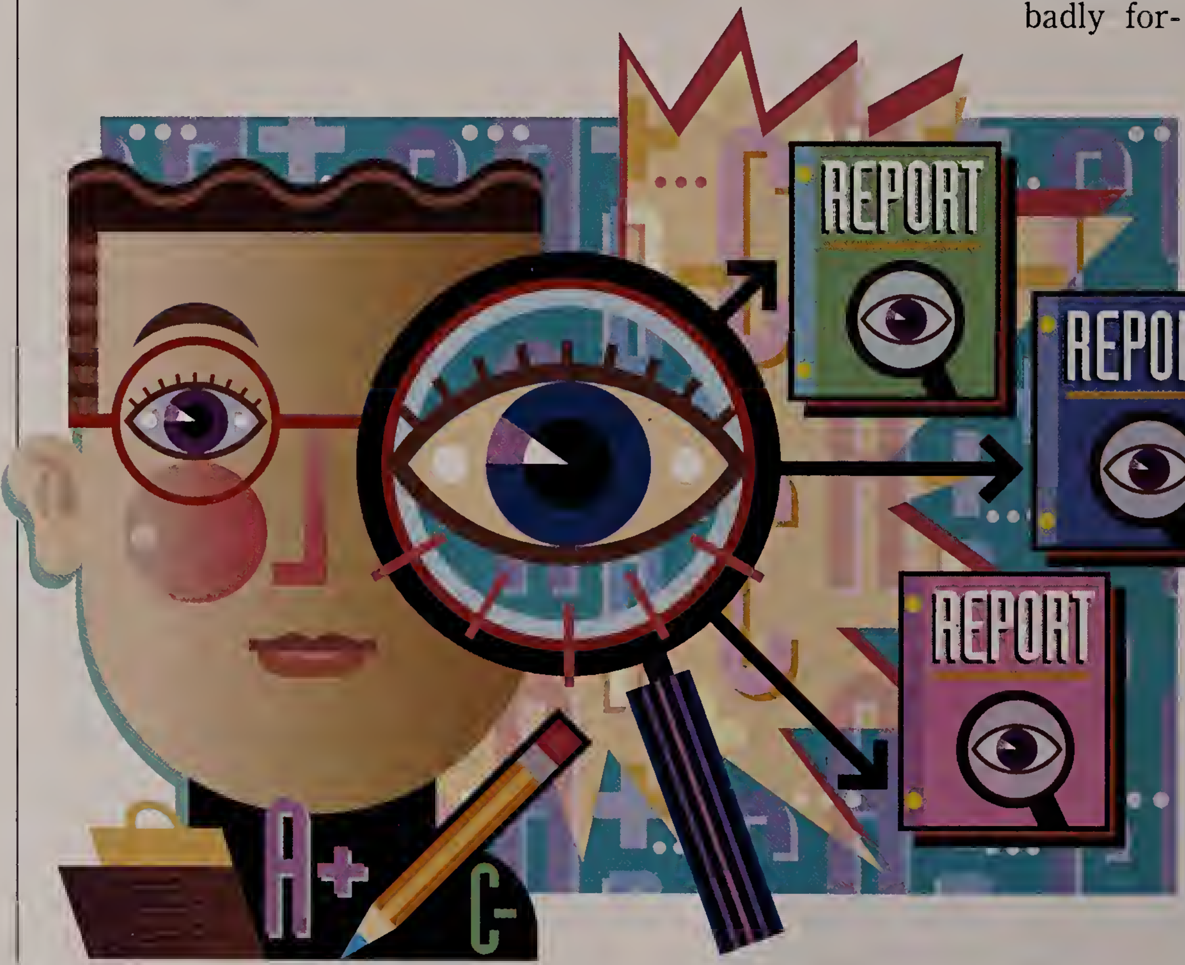

ILLUSTRATION BY JEAN TUTTLE

The surprising thing is that, to many practicing managers, these numbers are not at all surprising. Delving into the reasons for this sorry state of affairs could be a fascinating study in the dynamics of codependency, stress and shame; assuming, however, that we are more interested in fixing the problem, what are the most effective steps we can take?

While creating a new management-reporting system may be the order of the day, fixing problems with existing reports can provide significant benefits in a hurry. Even if you aim at creating a brand-new reporting system, identifying problems and opportunities in your current system is a very wise first step.

Audit Thy Reports

A simple review process can flush out many of the problems lurking in your reporting system. It is a good idea to first target those reports that you produce most frequently, distribute most widely or deliver to the highest levels of management.

The management-reporting audit can be conducted as meetings between an analyst and the recipients of each report. The first item on the agenda should be to question why the report is still alive. If no convincing answer is found, the report should be summarily discontinued. (Assuming the statistics above are repre-

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sentative, go figure the impact of a 20 percent reduction in reporting output on rain forests and spotted owls.)

If the report is justifiable, the analysis should turn to identifying opportunities for improving formatting. The most common formatting problems encountered in my sample were reports with too much information, poor layouts, missing information or bad sorting. Most of these problems are easy to identify—particularly if certain guidelines are kept in mind.

Form Follows Function

The best reports are action-oriented reports, and the best formats are those that help managers identify and address the need for action. The fundamental formatting question, then, is, "What action will this report trigger?" Once the rationale for a report is clear, it is typically easy to improve its format.

Consider, for example, a typical 10-page report for a video store, showing how many rentals each of the store's 300 video titles generated during the past quarter. The report is sorted alphabetically by title. A good suggestion would be to sort the report by rental volume instead of by title. A further improvement may be achieved by showing only titles with the highest and lowest rental volumes. But wait—these are only surface improvements, since the rationale for the report is not yet clear.

A short meeting with the store manager leads us to conclude that she intends to use the report to adjust the number of copies owned for each title. Now it becomes clear that we should compute for each title the ratio of monthly rentals per copy, sort the report by that ratio and present the manager with a one-page report showing only titles with very high or very low ratios. The manager may now use this report to acquire additional copies for high-turnover titles and to sell copies of titles with low turnover rates.

This example illustrates several guidelines derived from the "form follows function" principle. Primarily, it underscores the need to drive formatting decisions by first identifying the rationale for the report. Violations of this seemingly self-evident truth are probably responsible for many of the formatting problems afflicting your reports.

The best reports are action-oriented reports, and the best formats are those that help managers identify and address the need for action. The fundamental formatting question, then, is, "What action will this report trigger?"

The use of exception reports to reduce information overload is another guideline reflected in this case. One of my mentors used to argue that management reports should never be longer than one page; I still think there are cases where more than one page can be justified, but as the video-store example demonstrates, this rule works well most of the time.

Two more guidelines reflected above are the power of ratios and the importance of sorting in accordance with the issue at hand. Others include avoiding overprecision, keeping report formats uniform and using graphs. Graphs are particularly useful for depicting trends, proportions and correlations. Twelve of the 91 reports in my sample could be improved by using a graph rather than a tabular format.

On a Need-To-Know Basis

Finally, when the formatting issues have been addressed, the audit process can turn to the question of distribution. As the sample data indicates, the distribution lists of many reports should be updated to reflect who actually needs the information and how often. We've all seen cases of reports that are produced in multiple copies only to be filed or thrown away unread.

One option is to periodically attach a memo to reports asking each recipient to respond if they want to remain on the distribution list. Those managers who don't respond can then be taken off the list. A more aggressive move is to simply halt production of certain reports and see who complains. This can be risky, but I know of one account where such guerrilla tactics were applied to a set of routine reports generated for the judges in a state judicial system. None of the judges complained! Production of the reports was then changed from periodic to "on demand" and all lived happily ever after.

Another problem that needs to be addressed during the audit is the question of frequency. Many reports that monitor what used to be a "hot" issue have long since cooled off and should be produced less frequently. Another typical mistake is to send a report to all recipients using the same frequency. Typically, higher-level managers should receive reports less often unless certain exception conditions have been triggered.

Besides conducting a management-reporting audit, many other tactics are useful for improving the reporting situation in your company. In particular, you should consider enforcing the use of templates for report requests, creating a catalog of the reports used in the company, assigning organizational "owners" to each report, using modern report generators, and training both managers and analysts in the technical as well as conceptual aspects of reporting. As a first strike, however, a management-reporting audit is a fast and sure method for improving your report card. CIO

Ido Millet is a consultant and assistant professor of MIS at Penn State Erie based in Erie, Pa.

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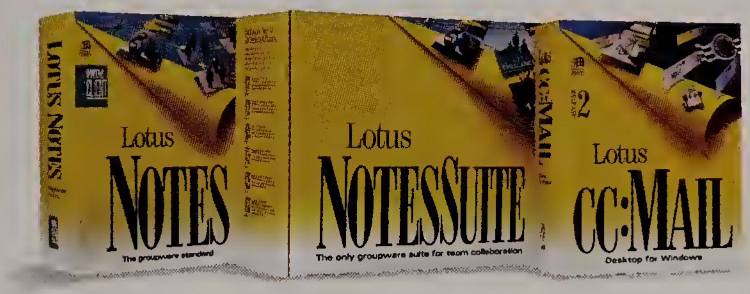

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Of Human Bonding

Business-process innovation can come from within and without. For one manufacturing company on the brink, the heads-together teamwork of union and management employees got things rolling. Their efforts are presented in the first half of this feature. In the second half, Aqualon's team tries to build on its progress by turning to the outside, namely, the collected knowledge of The Manager's Network, a group of Fortune 150 managers who paid a call on the Texas firm, analyzed its predicament and offered a promising vision of its future.

BY CAROL HILDEBRAND

ILLUSTRATIONS BY DAVE CUTLER

Of Internal Bonding and Revisionist Courses

Back in 1991, when Lee Hext slammed his truck door on the beginning of another workday, chances were good that he wasn't thinking about how to cut down on defective product or how to boost his company's return on equity. Instead, says Hext, president of Local 257 of the AFL-CIO and an Aqualon maintenance mechanic, "we spent most of our time hiding from supervisors, and they spent most of their time trying to catch us."

Ah, the transferable skills one learns as a youth. The trouble was, Aqualon was not the neighborhood playground. The Kenedy, Texas, company, which makes water-soluble polymers (derivatives of guar, a soylike plant) for use as oil-drilling lubricants, was a traditional manufacturing firm using 1960s top-down management to do business in the 1990s. And until management and union employees redesigned their workplace in 1992, tossing out those traditional boss/employee roles in favor of autonomous work teams, it was also a business in danger of being shut down by corporate parent Hercules Inc. of Wilmington, Del.

The redesign has kept Aqualon off the endangered-factory list, boosting the company's return on capital from about 1 percent to 25.4 percent. Today, Aqualon's high performance teams not only run the plant by committee but have redesigned nearly every process in the company. Line workers talk knowledgeably in business terms and participate in training (such as OSHA seminars) previously restricted to management. Formerly separate payrolls and benefits packages are now one, and time clocks have disappeared. Says Dickie Custer, employee relations coordinator, "We've come a long way in three years. It's almost like Alice going through the looking glass—fun, but also frightening."

It's not surprising to find that fear and pain played a role in Aqualon's redesign decision. Many management consultants point out that pain and fear are often the prime motivators behind corporate change. When the pain of the status quo becomes worse than the fear of the unknown, change will finally take place—and nothing registers higher on the pain-o-meter than Aqualon's chief change driver, the threat of lost livelihood.

Faced with a possible corporate shutdown in late 1991, the company formed an eight-person team with equal representation from union workers and management, and ensconced them in a conference room at the Kenedy Community Center for three months. Their mission: review Aqualon's operations and business practices and formulate a plan to steer the company back to profitability. The team's close-quartering quickly dissolved the "us-versus-them" attitudes of its members, says Oscar Danmier, a local union vice president and member of the team. "You can't sit across the table from a person every day and not see them as a human."

But jelling as a team was just the beginning of the group's efforts. It next sought input from every Aqualon employee in a companywide survey on plant strengths, weaknesses and employee values. Pat Dziuk, a plant technical superintendent and team member, says that the survey identified people as the company's greatest strength—and weakness. The vast majority of the labor force had been at Aqualon more than 10 years, so organizational knowledge ran deep—a big strength. At the same time, the survey fingered the company's autocratic, clock-watching supervisory style as a major source of frustration and resentment, particularly since it clashed directly with key employee values such as honesty, fairness and trust.

> **T**he company's autocratic, clock-watching supervisory style was a major source of frustration and resentment.

Using the survey results as a starting point, the team originally intended to solve operational problems from a total quality management perspective, which meant identifying each separate manufacturing process and applying associated problem-solving techniques. But separating each discrete process resonated disturbingly with the gardener's rule of weed-pulling: The smallest, most innocent-looking sprout will be the one that

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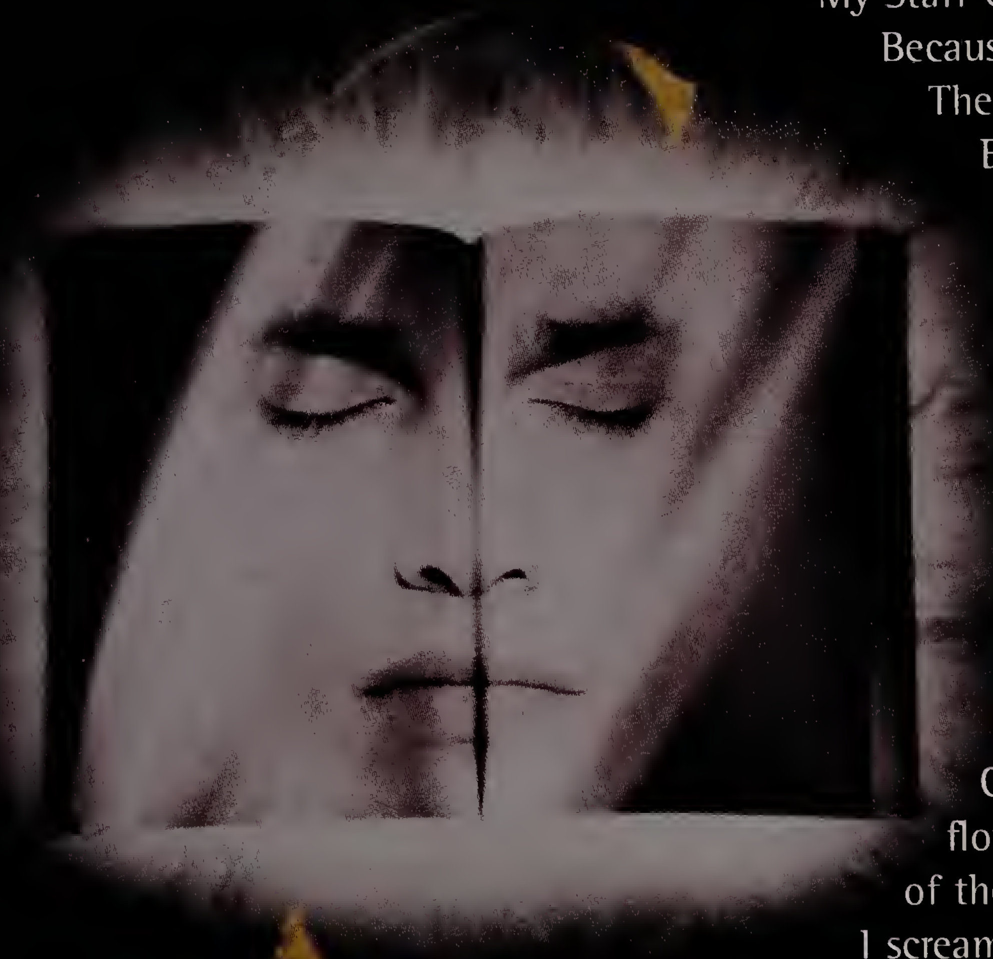

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turns out to have a taproot as big as the backyard when you give it a yank. The team found that not only were manufacturing processes inextricably linked but TQM alone was not enough to handle a complete company redesign. "It just blew up with a problem of this magnitude," Dziuk says.

> "**W**e've come a long way in three years. It's almost like Alice going through the looking glass—fun, but also frightening."
>
> *–Dickie Custer*

Faced with an action impasse, the group brought in two experts—Richard Torstrick, an internal Hercules consultant for the Parlin, N.J., plant, and Barry Macy, director of the Texas Center for Productivity and Quality of Work Life and professor of organizational design at Texas Tech University in Lubbock. Using outside benchmarking visits as an aid, the two helped the team formulate the Integrated Operating Plan (IOP). Instead of redesigning each operational process, IOP gave that responsibility to the source experts—the workers—and instead reengineered the overall management structure that governed the processes. IOP called for a steering team made up of both union and management personnel to run the plant. Each shift on the two Aqualon production lines, basic guar and guar derivatives, would take responsibility for its own scheduling, job rotation and peer appraisal. IOP removed some hierarchical barriers by placing everybody under the same health plan and salary structure and implementing a universal gain-sharing plan. (If the plant meets its yearly objectives, each employee receives a bonus equivalent to 4 percent of his or her salary.)

Although it required major concessions on each side, both management and the union approved the plan and implemented it in June 1992. The union eventually rewrote its labor agreement to reflect the new plan, tossing out a thick contract full of strict job classifications in favor of a seven-page, flexible bargaining agreement. In management, six front-line supervisors were laid off as workers took responsibility for production. Both groups now profess a much stronger respect for each other and a newfound ability to work together. "We began to trust each other," says Danmier, who readily admits that he was previously one of the most vocal union agitators at the plant. "By laying off at the management level, they sent a clear message of commitment."

In the three years since IOP's implementation, line workers have formed teams to redesign product-line operations, revamp quality control and receive ISO 9002 certification. Workers admit that the level of commitment, responsibility and communications required by the new system can be daunting; after three years, they're still getting used to it. (Macy says that organizations should expect employees to take several years to integrate such wholesale change into the corporate culture.) "Before, when we were second-guessing our supervisors, it was easy," says Plant Operator Rudy Diaz. "But it's scary when you are the one who says, 'This lot is good.' It's a $40,000 or $50,000 decision, and my name is on it."

In spite of such jitters, worker-led changes have increased productivity. Aqualon's employees received that 4 percent gain-sharing bonus for meeting 1993 objectives, and Dziuk says that they are producing a higher quality product. For example, he points out that pre-IOP rates for off-grade products typically ran 12 to 14 percent. For 1993, the rate was 1.3 percent; in 1994, it was 1.4 percent.

Still, the company isn't convinced that it is out of the woods yet and recently turned to The Manager's Network to help it tackle new challenges. (See related story, below.) For example, a recent economic downturn hurt new order levels, and employees probably will not get the gain-sharing incentive they received in 1993. The company also struggles with corporate issues, such as a Hercules-mandated price structure that is higher than the competition's prices. But nobody begrudges the uncertainty that often comes with the need for constant learning, because the trade-off is exhilaration. "You managers, let your workers think," advises Plant Operator Jim Alaniz. "You'd be surprised at what they can come up with."

Of External Braintrusts and Course Corrections

For companies seeking to wring a measure of success from today's competitive market, help does not often come simply. Executives can choose from complex management theories, consultants with complexes or equally complex technology applications. Then there's The Manager's Network. Sponsored by Texas Tech University's Center for Productivity and Quality of Work Life, The Manager's Network is a three-day on-site meeting specifically designed to help companies foster innovation—not through jaw-dropping techno-gizmos or Einsteinian deductive reasoning—but through the simpler mechanism of sharing ideas and insights. This advice is drawn from the accumulated experience of about 25 line managers, human resources types and TQM directors hailing from companies such as Dow Chemical Co. and Coca-Cola Co.

So it's not surprising that when Aqualon's leaders looked for advice on how to continue the company's turnaround, they chose The Manager's Network, whose core values resonate with Aqualon innovation triggers of communication and team building. The Kenedy, Texas-based manufacturer, which produces guar-based lubricating agents for the oil-drilling industry, had recently finished restructuring the company into autonomous work teams. While both line workers and management were proud of their progress, they needed help in moving still further ahead in their turnaround efforts.

While Aqualon avoids the wallet wallop of consultant fees (the program charges none), plucking knowledge from network colleagues is hardly a free lunch. Hosting a site visit means two intensive days of plain hard work on both sides of the equation. Network attendees tour the plant on day one and listen to presentations on the company's innovation efforts. At the Aqualon visit in October 1994, employees talked with astonishing honesty about their shifts to self-directed work teams through such efforts as team-led manufacturing-process redesign, contract-bargaining sessions between union members and the Aqualon management team, and Aqualon's relationship with parent company Hercules Inc., among other things (see related story, Page 32). The warts-and-all presentations were vital to a realistic assessment of the site: The more the visitors learned about Aqualon's inner workings, the more Aqualon would reap the fruits of well-informed advice. And, says Plant Manager Edward Coates, learning was the main objective. "We know they're looking at a work in progress. We know we have a long way to go, and we know we have a lot to learn."

"We know they're looking at a work in progress. We know we have a long way to go, and we know we have a lot to learn."

–Edward Coates

Even mealtimes were used for information gathering. Aqualon hosted all the meals, giving guests a chance to mix informally with their hosts. For example, the entire company attended a lunchtime barbecue so that visitors could pick the brains of Aqualon employees not otherwise involved with the presentation process. And although analyzing the host site was the primary focus, network members also picked up a healthy measure of innovation tips to transfer to their own companies. David McKinnon, plant manager at Hoechst Celanese Corp.'s facility in Coventry, R.I., was looking for inventive ways to reduce internal resistance to autonomous work teams at his own organization and came away impressed with the cooperation shown by both union members and line management. Deborah L. Wiley, an area supervisor at Hercules Inc.'s plant in West Elizabeth, Pa., picked up an operational tip during the plant tour. "They have a good idea about bagging their product that I think I can transfer to our plant and save us some money," she says.

After a full eight hours of info gluttony, network participants met at day's end for what amounted to a core brain dump, which is generally mediated by Barry Macy, the center's director and professor of organizational design at the Texas Tech University College of Business Administration. Here, participants shared observations and drew up a list of Aqualon's strengths and weaknesses. For example, the group was very impressed by the understanding of business economics shown by plant workers across all levels, as well as the generally high level of trust and honesty throughout the plant and the very open management/union relationship. However, participants also detected remnants of the us-versus-them attitude common among some union workers in the days prior to autonomous work teams. They also noted a lack of financial support from Hercules, which was expending most of its efforts on international expansion, and an overdependence on the guar gums product. Finally, almost 12 hours after hitting Kenedy, network members headed back to their hotel to rest up for the next day's main event—creating a present-state assessment for Aqualon.

The list of strengths and weaknesses provided the basic fodder for the assessment. Mediators first divided the members into several smaller teams. Then, using a four-step model, each group analyzed Aqualon's present situation versus its vision for the future, cre-

> "I feel we've learned more from you than you could possibly learn from us."
> *–Edward Coates*

ated a "gap analysis" of the situation and developed specific transitional action strategies to help the company get from here to there. Last, each group created a visual representation of the company's present state.

Each group then presented its findings and recommendations to a combined meeting of Aqualon's union and management and the network visitors. Although the artistic abilities and metaphors varied widely, each team's "mural" depicted a remarkably similar set of strengths, success barriers and recommendations for hurdling said barriers.

One typical scenario, which Macy says appears often at meetings, was the "company-as-ship-at-sea" vision. The illustration showed the SS Aqualon steaming across the high seas, with a mostly energized crew (some slackers) keeping the vessel shipshape, except for some barnacles on the hull. The much-patched ship is bathed in sunlight, but storm clouds are gathering. In the water, sharks circle, and a distant submarine—the SS Hercules—occasionally fires "cost allocation torpedoes."

Translated into prose, the picture reads like this. Aqualon has come a long way in two years. Management and union workers' teamwork and terrific level of trust, honesty and commitment have helped patch the boat and keep it afloat. However, there are some dangers lurking, the first being the parent company Hercules, which has scuttled some Aqualon cost-saving efforts with those "corporate cost" torpedoes. (Similar to government's unfunded mandates, Aqualon had no choice but to fund corporate projects when so commanded.) Hercules is also a barrier to direct contact with customers since it, not Aqualon, handles sales and marketing. The storm clouds and circling sharks are emblematic of Aqualon's overdependence on a single, cyclical product and a lack of capital, respectively. Lastly, the unsightly barnacles represent the lingering emotional baggage from the pre-autonomous team days.

The team recommended that Aqualon address the Hercules issues by lobbying for corporate costs to be levied on a requested-services basis. The firm might also consider using the plant manager as a plant advocate at the corporate level to help achieve long-term buy-in and commitment from Hercules. Aqualon plant staff should consider attending meetings with Hercules sales and marketing staff to find new products and increase customer satisfaction. The group also advised Aqualon to expand its research and development efforts to help diversify its product line, and to examine and address lingering resentments through "softer skills" training and continuing cooperation between management and union leaders.

While it's obvious that two days of talk and advice can't heal all wounds, Plant Manager Coates says the meeting was a tremendous boon. Besides providing outside affirmation of, and credibility for, Aqualon mandates that were meeting corporate indifference, it also helped employees look at the company from a fresh perspective. Speaking at the closing of the Aqualon visit, Coates told the assembled network members, "I think you've hit the nail right on the head. I feel we've learned more from you than you could possibly learn from us." Now comes the challenge of putting network remedies into action, and Coates is grateful to his ad hoc consultants for helping him keep the SS Aqualon seaworthy.

Who's Who and Who's Not in The Manager's Network

The Manager's Network program is divided into four North American Manager's Networks totaling about 135 members. Host sites are culled from the member companies; each regional network meets twice yearly at the chosen work sites across North America.

So far, about 65 of the Fortune 150 are members, says Barry Macy, director of the Texas Center for Productivity and Quality of Work Life and professor of organizational design at Texas Tech University in Lubbock. He divides what he terms "innovation action levers" into four categories: structural (the organizational infrastructure tended by line management), technology, TQM and HR. For example, one of the structural tactics that Macy calls a lever is the use of semi-autonomous work teams; a technological lever is just-in-time systems.

The makeup of network attendees falls out along these same categorical lines, with one big exception. About 70 percent of the members are line management (structural) executives ranging from plant manager to president; the other 30 percent are HR and TQM directors. And who represents the technology category? Macy says he hasn't seen hide nor hair of a CIO at any of the meetings. Blame for the dearth of technical people may partially lie with company executives who don't view the IT function as strategic enough to participate. Macy, however, points out that many IS staffs simply do not keep up with business innovation efforts. "It would be very useful to have them at meetings," he says, "but most of those guys are in functional silos and are anywhere from 10 to 20 years behind this kind of thinking." Anybody interested in picking up this good-natured gauntlet can contact Macy at 806 742-1530.

–C. Hildebrand

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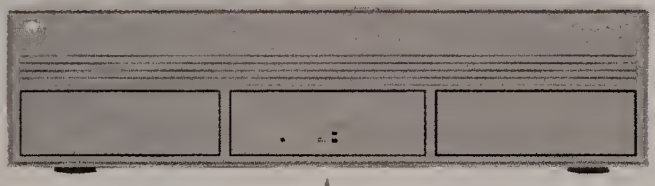

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Pumping Up the Volume

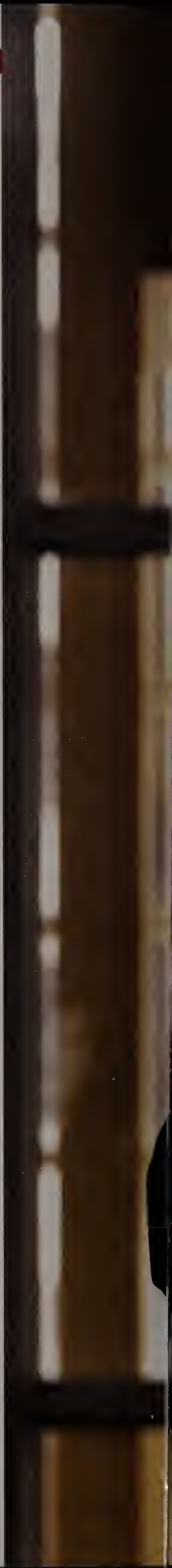
Small may indeed be beautiful, but it's a stage to grow out of. No one wants to stay small forever. Expansion-minded businesses can leverage technology to help accelerate growth.

BY MEGAN SANTOSUS

THE COMPETITIVE METTLE OF AN ORGANIZATION used to be a function of its size: The larger the company, the more prepared it was to thwart competitors and seize ever-greater market share.

But bigger no longer guarantees better. "The reality of the marketplace is that being smaller and light-footed has advantages," says Darvis Cormier, a partner in Deloitte & Touche's Dallas office. "Smaller companies are able to respond to changes rapidly because [they have] few established hierarchies."

Small and medium-sized companies are turning to information technology for many of the same reasons as their larger counterparts; they have efficiencies to gain, new markets to develop and competition to keep at bay. At Lone Star Steakhouse & Saloon Inc., the ability to analyze sales and labor-control data on a daily basis "is critical to our growth," says CFO John White. In 1992, the Wichita, Kan.-based restaurant chain had 23 outlets. Today, it is a $196 million company that operates 106 restaurants, with 45 more opening this year. All will



LESLIE KIMERLING: *"We're out to grow not only for ourselves, but also to help define the health-club business as a legitimate industry."*

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be tracked at the home office with an internally developed PC system linked to an IBM RS/6000. "We rely on our systems to monitor operations so we don't go astray," says White.

Fast-growing companies don't need an IT budget that rivals the GNP of a developing nation. Thanks to the plummeting prices and improved performance of PCs, small firms (small is relative, but for the purposes of this story we are treating those with less than $150 million in revenues as small) now use the same powerful applications as Fortune 500 companies.

The main problem faced by smaller companies is a lack of internal technical expertise, according to William H. DeLone, an associate professor of information systems at The American University in Washington. "In dealing with rapid growth, smaller companies will hit a wall if they don't have good systems," he maintains. "Many people who run smaller businesses are not knowledgeable about systems, and they'll get taken to the cleaners if they hook up with the wrong people."

> **"Many people who run smaller businesses are not knowledgeable about systems, and they'll get taken to the cleaners if they hook up with the wrong people."**
>
> *–William H. DeLone*

As a case in point, DeLone cites a small Pennsylvania gas distribution company that hired a programmer who tried—and failed—to devise a customized solution for tracking retail operations. So, the company president opted to buy off-the-shelf systems from a software consultant who was recommended by peers. That effort failed as well, leaving the president frustrated and the company about $45,000 poorer, and with nothing to show for it.

Mesa Air Group has avoided this fate by keeping things as basic as possible. Although no longer small (revenues are projected to exceed $400 million this year), the regional airline's continued growth rivals that of emerging companies. According to Information Systems Director Harley Murray, all systems are developed by a four-person staff on an IBM RS/6000 at headquarters in Farmington, N.M.

"Our philosophy for developing software is strictly bottom line," says Murray. "If it saves us or makes us money, then it's worth making a change." It's the users' responsibility to provide Murray's group with the cost justification. Without a huge staff, getting the work done is a constant concern. "There's no question that every day is a challenge," says Murray. "We always have to adjust schedules and be very flexible, and we still manage to accomplish what we need to with such slim resources." One way Mesa manages the workload is by delegating responsibility for specific software functions to individual programmers. For example, one programmer may work on interfaces, while another develops databases. In this way, various phases of a project—or multiple projects—can be handled at the same time.

Smaller companies often have a distinct advantage facilitated by IT, according to Cormier. "The big trend is integrating enterprisewide information systems that enable smaller companies to focus on speed," he says. By enabling such players to seize opportunities and exploit niches, IT is a strategic asset that facilitates competition with much larger companies. As the following examples illustrate, smaller companies that are growing rapidly can still reap strategic rewards from technology.

Town Sports International

Health and fitness clubs are still largely a mom-and-pop kind of business. While there are a few large regional chains, most clubs are solely owned and operated. Town Sports International Inc. (TSI) is out to change that. The New York-based company—which operates the New York Sports Clubs, Boston Sports Club and Washington Sports Clubs—owns and operates 28 health clubs located in urban areas throughout the Northeast and in Switzerland. The company's 55,000 club members spend $45 million working out annually. According to Leslie Kimerling, vice president of information management and corporate planning, four new clubs will be added per year. "We're out to grow not only for ourselves," she says, "but also to help define the health-club business as a legitimate industry."

As a consumer-oriented business, TSI is most concerned with providing a high level of service. Achieving this requires a balance between giving members what they want while maintaining operational efficiencies and enforcing regulations. It might be convenient for members to simply walk into a club and make a beeline for the Stairmaster, but check-in procedures are required for reasons of planning and security. And knowing what members want requires gathering information about them. The trick is to do it in a nonintrusive way. Ideally, Kimerling would like to gather information through consoles on exercise equipment that can track individual workouts. Some equipment manufacturers are just beginning to explore this capability.

TSI applies information technology in practically every area of the enterprise, including business development, operations, and sales and

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"By focusing our attention on reasons why people leave over time, we hope to extend the average length of membership."

–Leslie Kimerling

marketing. Current systems consist of a host-based architecture with two Compaq servers, one for financial and accounting applications and another for club management. Most clubs are linked with corporate offices via T1 lines. An electronic-funds transfer (EFT) system, from Checkfree Corp. of Columbus, Ohio, automatically debits checking accounts or credit cards, sparing members the need to write checks every month (and, not coincidentally, eliminating any pesky dues-collection problems).

In addition to billing information, the EFT system stores all customer information. In the clubs, attendants use terminals to collect data from members as they present their ID cards. Clubs will soon implement a swipe-card system that Kimerling hopes can also be integrated with a smart-card application. Instead of carrying coupons around, for example, a member can use the smart card to purchase such extras as personal training. Today, however, members are asked by an attendant what they plan to do during their visit. Besides joining the EFT system, that information also goes into a database that helps TSI plan how best to manage facilities during peak usage. For example, if a trend emerged that people regularly queued up during the busy lunch hours to use one of two treadmills at the same time three stationary bikes were going unused, the club manager might decide to swap two of the bikes for another treadmill.

"We know to the minute who is in our clubs and what they are doing," says Kimerling. Analysis of the data also reveals patterns that help sales and marketing design membership programs. In New York, for example, chances are good that a member of a club in TriBeCa has a different lifestyle than a member from the Upper East Side. Kickboxing classes may be in demand at one location while baby-sitting services and aerobics are popular in another neighborhood. Knowing the needs of its clientele helps TSI offer the programs and configure the floor space in the way that best suits local preferences.

TSI is also creating a club-management database, developed in-house, that will store information about clubs under construction as well as the status of equipment maintenance schedules and warranties. Together, the databases provide management with the ability to monitor customer satisfaction and identify potential problems by tracking reasons why members quit. If one club suffers a flurry of cancellations, management can investigate whether the exodus is due to conditions at the club or the arrival of a new competitor in the neighborhood.

While a certain amount of membership turnover is inevitable, management needs to be aware of club conditions that are within its power to change. "By focusing our attention on reasons why people leave over time, we hope to extend the average length of membership," says Kimerling.

TSI is in the midst of a comprehensive IT overhaul that involves enhancing existing databases and developing new ones, while implementing data-access tools. An online contracting system is in the works that will automatically upload new-member information to the corporate office, streamlining the contracting process and reducing the chance of errors by eliminating the need to rekey data (by law, there must still be paper membership contracts). IBM-compatible PCs will be rolled out to each of the clubs, enabling all locations to offer members the same level of personalized service throughout the chain. Says Kimerling, "We're laying the groundwork now and expect to see the benefits down the road."

The ultimate goal is to build a seamless architecture that will track each individual membership from initial inquiry to termination. "The more we know how well we've done at our current sites, the better situated we are to expand into new areas," says Kimerling.

Regal Cinemas

With VCRs, cable television and pay-per-view vying for the public's attention, movie theaters might seem doomed. But with 1994 revenues of $136 million—an increase of more than 39 percent over 1993 results—Regal Cinemas is one movie exhibitor that's growing like gangbusters. In a recent 12-month period, the Knoxville, Tenn.-based company grew from 45 locations to 120, primarily in the eastern United States. With another 11 theaters under construction and seven existing theaters undergoing expansion, aggressive growth will continue. Soon Regal will operate more than 850 screens—which adds up to a lot of popcorn.

Information technology is helping manage Regal's prosperity. Director of MIS J.E. Henry and his five-person staff ensure that managers have timely information about every aspect of theater operations, box-office receipts and concession sales. Five

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J.E. HENRY *and* **ROB DELMORO**: *More choices means greater challenges. Regal tracks box office receipts for multiple screens and seven ticket types.*

IBM-compatible file servers and 60 workstations are linked at headquarters via a Novell network. Through a dial-up connection, box-office and concession revenue figures (as well as revenue from miscellaneous sources such as pay phones and video games) are downloaded every morning to headquarters. The data is posted into DataFlex, a relational database system from Data Access Corp., in Miami Lakes, Fla.

According to Henry, management relies on accurate, up-to-date information to keep Regal running smoothly. A daily "snapshot" report lists revenues for each movie on a weekly basis; "flash" reports contain daily one-line summaries of revenues per theater and keep managers informed of important operational details. For example, if cash deposits don't reconcile with revenues at one theater, a manager needs to know quickly in order to find out why and take appropriate action.

Regal aims to achieve economies of scale and attract different segments of the population in a given market. "An essential part of our strategy is to build theaters with a minimum of 10 screens so we can provide more options to our customers," explains Henry.

Offering more choices means that something as fundamental as tracking box-office receipts becomes a challenge. Regal sells seven types of tickets, including adult, child, senior and discount. Participating theaters also offer promotional discounts in conjunction with the likes of Dunkin' Donuts. Two dozen Munchkins, say, might be worth $2 off an adult ticket. At theater box offices, ATS, a system from O.C. Enterprises of Dallas, tracks each type of ticket separately. The home office analyzes the data to determine how promotions are faring. "If a promotion is not working, we know about it quickly, which helps us design better promotions in the future," says Henry.

The bulk of Regal's profits come from that theater industry bulwark, concession sales. Maximizing revenues requires constantly tweaking the product mix because a hot item in one market might go nowhere in an-

PHOTO BY BOB SCHATZ

other. "Technology enables us to track sales at our fingertips and determine what's selling well," says Rob DelMoro, the director of theater promotions and concessions. Each night, a manager logs sales into the ATS system. (Cash registers are not integrated with theater-based servers because a network outage could disrupt sales.) Managers rely on weekly updates to compare how a particular concession item is selling on a theater-by-theater or chainwide basis. When sales figures were compiled manually, it took weeks or months before changes could be made at the concession counters.

"If a promotion is not working, our database lets us know about it quickly, which helps us design better promotions in the future."

–J.E. Henry

Concession revenue per capita is an important metric, calculated by dividing concession revenues by total attendance. This figure is particularly useful at newer theaters that include cafes serving such nonstandard fare as cappuccino and muffins. A low per-capita figure may indicate a problem with inventory or product selection, and management is alerted to take appropriate action. According to DelMoro, Regal's ability to effectively monitor concessions translates into lower food costs—and savings that are passed on to consumers.

Running a successful theater involves more than booking the latest blockbuster. Henry is busy with several projects as Regal continues to expand. District managers, each of whom oversees about 12 theaters, will soon have Everex Systems Inc. laptops so that they can access critical data remotely. Patrons may soon spend less time in line waiting to buy tickets and concession items, thanks to a touch-screen system and a debit-card application from Softsense Comp Products in Atlanta. Moviegoers can use cash or credit cards to buy tickets and concession coupons from touch-screen-based kiosk systems located in theater lobbies. A printer produces a slip that is exchanged for prepaid concession items, thus reducing waiting time. And to streamline communications, theaters will soon have e-mail links with the home office. When used in conjunction with a newly acquired imaging system from InfoTEK Inc. of Knoxville, Regal's Novell e-mail system will let employees access reports directly from their desktops, saving both time and paper.

"We're selling the whole moviegoing experience," says DelMoro, and technology is helping Regal make that experience as enjoyable—and profitable—as possible.

Duracom Computer Systems

With ruthless competition marked by ongoing price wars, the computer manufacturing industry has a reputation for devouring its young. But Duracom Computer Systems Inc., out of Irving, Texas, has beaten the odds for survival. At its founding in 1989, Duracom's sales totaled about $126,000. With 80 employees and 1994 sales of more than $25 million, the company has become one of the fastest-growing private concerns around. According to Tom Dodson, the founder and current president, the primary reason for Duracom's success can be summed up in one word: speed.

As a manufacturer of customized workstations, PCs, servers and notebooks, Duracom relies on a quick-response strategy to serve the value-added resellers and systems integrators that comprise its customer base. "We don't compete based on having the lowest prices but on providing the best service," Dodson says. Duracom strives to build and deliver its machines faster than competitors such as IBM and Compaq can pick their products out of a warehouse and ship them.

For its first five years, Duracom thrived using off-the-shelf packages such as Excel. "We got a lot out of inexpensive tools," Dodson recalls. "Each manager was taught how to program in Excel so they could take care of their own information needs." By the time revenues exceeded $20 million, the company's fragmented approach to systems had created bottlenecks. In the financial area, for example, not everyone used the same system. Some data had to be entered more than once, compromising integrity. Since Duracom prided itself on excellent customer service and fast turnaround, bad data threatened to undermine the company's strongest selling points.

Establishing an integrated infrastructure was deemed a priority, particularly when management anticipated that a second manufacturing facility was needed. To efficiently manage the growing number of orders, "it's essential for us to get accurate information to the right people at the right time," explains Technical Services Manager Bill Wagner. Duracom bought a standard package from SBT Accounting Systems, of San Rafael, Calif., and customized it. As a result, all aspects of order management are integrated, including inventory, general ledger, and accounts receivable and payable.

Rollout began in January 1995 and should be complete by June, but Duracom is already seeing benefits.

Salespeople now have the ability to do custom product configurations on the fly by modifying a predetermined configuration to meet customer needs. For example, say a standard configuration calls for a 13-inch monitor, but the customer wants a 17-inch one. All the salesperson has to do is enter the standard item and change the specification for the monitor only. The price for the customized version is calculated automatically, saving time and reducing errors.

"Everyone is now on the same system, so we don't have to do any more adjusting to get the numbers correct," says Controller Cindy Parks. "This helps us get accurate financial statements out to a lot of people both inside and outside the company." Through an online capability, credit approval is now outsourced to a division of Dun & Bradstreet. Representatives fill out a standard, one-page electronic form and send it off for approval, which usually takes 24 hours. Previously, the process had taken as long as two weeks—more than enough time for customers to lose an order to another reseller.

"We recognized that we had reached a point where we would have to upgrade our MIS function if we wanted to reach the next level."

–Tom Dodson

Duracom is able to integrate inventory and accounting systems with automatic caller identification, eliminating the need for customers to repeat information every time they call to place an order; when a call comes in, the customer's business history with Duracom is automatically presented onscreen to the customer representative taking the call. And Duracom is in the process of setting up a bulletin board service so that customers can easily access the latest information on its offerings.

"The three things that really make a difference for us are our telecommunications, PC systems and the software that links everything together," says Wagner. "We have a cost-effective infrastructure that allows us to serve our niche and continue to expand."

Dodson believes that rapidly growing companies have to be alert enough—and flexible enough—to anticipate bottlenecks and respond to them quickly. "We recognized that we had reached a point where we would have to upgrade our MIS function if we wanted to reach the next level." CIO

CINDY PARKS *(from left),* **TOM DODSON** *and* **BILL WAGNER:** *competing on service, not price.*

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RISKY BUSINESS

The city of Sunnyvale, though a paragon of local government, still must be careful to manage risk, particularly those perils peculiar to its massive migration to a client/server platform

BY PETER FABRIS

IT **projects in government** are often subject to more-intense public scrutiny than those in the private sector. When a major municipal IT project runs afoul, chances are pretty good that the gory details will be well chronicled in the press. That unwelcome exposure could create a political liability for city leaders, including the CIO, and incite the wrath of irate taxpayers. These concerns are present even in Sunnyvale, Calif., a city of 120,000 in the heart of Silicon Valley that has gained a national reputation for government best practices.

Sunnyvale's performance-based budgeting concept has garnered plaudits from Vice President Al Gore's National Performance Review and other sources. (See "Silicon Valley Civics," *CIO*, Sept. 1, 1992.) Like many private-sector executives, Sunnyvale department managers are held accountable for expenses and results. For Encarnacion "Shawn" Hernandez, Sunnyvale's director of information technology, the city's reputation is a source of pride. But it also creates high expectations, magnifying the risks inherent in any major project.

Hernandez and his 28-person staff are in the process of converting mainframe legacy systems to a client/server platform, a huge task rife with risk. The first phase of the project has centered on putting the new infrastructure in place. Now the staff is gearing up to move applications off the Hewlett-Packard Co. host. The performance/budgeting and business one-

SUBJECT

City of Sunnyvale, Calif.
Industry: Municipality of 120,000 residents
Annual budget: $120 million ($3.5 million IS; $8 million ongoing IT-related capital replacement fund)
Total employees: 750
IS staff: 28
IS executive: Encarnacion "Shawn" Hernandez, director of information technology

OBJECTIVES

- **Successfully complete an organizationwide migration from legacy systems to client/server platforms and applications**
- **Preserve and enhance the city's reputation for excellence in government management and high-quality customer service**
- **Restructure output-based IS program to one that is outcome-based, using criteria that will result in meaningful and measurable outcomes for IT projects**

CONCERNS

- **How can keeping tabs on major projects reduce risk, and what are some effective methods of tracking application development?**
- **To avoid the hazards of an underskilled IS staff, what are some methods of assessing technical skills and establishing appropriate development/training plans?**

PHOTO BY EDWARD CALDWELL

SHAWN HERNANDEZ: *"How do others keep projects on schedule without stressing staff beyond their limits?"*

JOHN THOMAS FLYNN
Commonwealth of Massachusetts

GAVAN TAYLOR
Putnam Investments

JOHN M. HAMMITT
J. Hammitt Group Inc.

stop permit systems, two critical pieces of Sunnyvale's software infrastructure, need to be rewritten from the ground up for a client/server relational database.

Hernandez acknowledges the risks involved in the platform switch. "Client/server is not a stable environment, and the technology is constantly changing," he says. "What you buy today, you're not sure will be good in two years, and it takes a year and a half for full implementation."

To avoid overwhelming his staff, Hernandez has broken the migration project into components so that the staff can train as work progresses. Making certain his crew is prepared for each step is a constant consideration. Sometimes Hernandez wonders if he's bitten off more than he can chew. "We're taking it in stages, but are the stages too big?" he wonders. "How do others keep projects on schedule without stressing staff beyond their limits?"

Users represent another major source of risk. Will they conform to the technology path IS lays out? For example, the city has standardized on

- **Given the long time frame of a client/server migration, how do you assess and minimize risks associated with equipment and software purchases?**
- **What other techniques will minimize IT project risks, and will these work for the public sector as well as the private?**

Microsoft Corp.'s Windows, and Hernandez says his department isn't prepared to accommodate devout Macintosh users. At the same time, he recognizes the need for a cooperative, collaborative relationship with users, since they ultimately determine the project's level of success. Hernandez hopes to reduce risk by clearly defining responsibilities and accountabilities for both users and IS. "It removes much of the fear and avoids a lot of finger pointing," he says. "It's critical that users' expectations meet reality." He wonders what other techniques he could employ to maximize user cooperation.

Sunnyvale's IS group is currently establishing a strategic plan to keep IS in sync with the city's master plan. This will include a set of "super rules" to guide the department's future IT-project planning. For example, rules will stipulate open systems and outcome-based project evaluation. Hernandez would like panelist input to help establish rules and processes that would prevent IS projects from going astray and ensure that Sunnyvale remains a showpiece for the reinvention of government.

John Thomas Flynn, *CIO, commonwealth of Massachusetts, Boston*

Mr. Hernandez, your risk-management issues are all too familiar here in the commonwealth of Massachusetts. We face such dicey issues as multiple data centers, overlapping networks and noninteroperable systems. State agencies were forging ahead with their mission-critical applications without adequate consideration of statewide implications. In addition, standards development and training waned, and project oversight and performance evaluation were more often than not simply customer-friendly technical support.

You're right on the money in realizing that such risky situations call for better planning, coordination and oversight. Achieving this, though, is something else. When I was appointed the commonwealth's first CIO last summer, I had one overriding challenge—to coordinate the state's $250 million annual IT investment as a primary tool for reinventing state government. I realized that traditions don't change overnight, and one has to lead government in an inclusive way. To this end, we created our IT Coordinating Council, consisting of a cabinet-secretary-appointed senior policy person and a secretariat information officer. Both worked with the CIO to plan and coordinate IT-related initiatives.

In addition, we reinvigorated a blue-ribbon commission of private-sector gubernatorial appointees to act as a board of directors for the Coordinating Council. Given your location, I think you could easily find such an advisory committee, if you don't already have one. Coordination is always easier if it's inclusive, and a formal association like our council will help by establishing standards, oversight procedures, funding priorities, etc. But sooner or later, conflicts

SECOND OPINIONS FOLLOW-UP

FEDERATED MUTUAL INSURANCE CO.

MAY 1994—Federated Mutual Insurance Co.'s information systems department was struggling in its attempts to please everybody at the $800 million Minnesota-based company. The 180-person department needed to break out of its old habits and improve service. Rebecca Dawley, vice president and director of business information services in Owatonna, wanted to step back and re-examine the whole service strategy to determine exactly what IS should be doing and how to do the best job possible. A fledgling committee of IS practitioners and business-unit managers had begun to examine IS-service priorities and raise awareness, but Dawley acknowledged the need for greater management input in identifying and prioritizing services. She was also concerned about overcoming IS-staff resistance to change.

In a Second Opinions article published one year ago, a panel of IS leaders from Johnson Controls Inc., Texaco Inc. and Unisys Corp. joined with a CSC Impact consultant to offer advice on how to whip an IS-service strategy into shape (see "Redefining Moments," *CIO*, May 15, 1994).

The first step, panelists agreed, was to find out what services IS offered and how users rated their performance and importance. Following panelist advice, Dawley brought in a facilitator to conduct interviews with users and hold workshops to iron out priorities. The facilitator, Ouellette & Associates Consulting Inc. of Bedford, N.H., "did a nice job helping us find out customer expectations to a greater degree than we would have otherwise," Dawley says.

Consequently, IS is focusing its improvement efforts on consulting services for users and problem solving as well as on honoring commitments. "We need to provide more information to business partners to help them make more-informed business decisions," Dawley says. "And we need to make sure we're meeting commitments—project dates, etc.—or communicate why we can't." Satisfaction has increased among business partners as a result of these efforts. "It has made a difference," she says.

The staff has also shifted resources away from legarise. Use your board of directors to resolve these.

Oversight, as you know, is one of the most fearful words in the CIO lexicon. You can always find someone willing to manage a project, but many will avoid oversight. It's the kind of function that receives notice only when something goes wrong. But oh how you get noticed when it does, particularly in the public sector! Oversight is so detested, it is often repackaged as technical assistance or quality control, which changes the point of view from external to internal. While this may be valuable, even commendable, it should not be mistaken for oversight.

We created an IT project oversight directorship, reporting to the CIO, responsible for directing and coordinating oversight on all IT projects. We contracted with two well-established companies, Maximus Inc. of Wellesley, Mass., and Deloitte & Touche LLP of Trenton, N.J., to offer independent assessment, truly valuable when discussing oversight with

JOHN THOMAS FLYNN: *Each agency project pays for its oversight through a chargeback system.*

PHOTO BY JULIE HOUCK

SECOND OPINIONS: THE I.S. SERVICE STRATEGY

REDEFINING MOMENTS

IS departments seeking to redefine their service strategies need to stop relying on old assumptions, look at what they're doing now and listen to what their customers expect from them in the future

BY RICHARD PASTORE AND CAROL HILDEBRAND

acy updates toward new development for specific business lines. Other services, such as training, were identified as candidates for outsourcing. Some end-user training is now being outsourced.

The seeds of change have sprouted among the once-resistant IS staff, thanks to persistent communication and new accountability in performance reviews. But there is much more sowing to be done, Dawley admits. "When you talk in generalizations, the staff say they're convinced [that changes must be made], but they don't necessarily make the connection between our general philosophies and their actions."

Implementing service-strategy philosophies and action plans is one of the greatest hurdles Federated Mutual's IS group faces. "As realistic as you try to be when setting up action plans, there are always other priorities that interfere and put you behind," Dawley says. Ideally, she would like to have a facilitator remain on hand to keep the department on schedule and on target.

Perhaps help will come from the firm's cross-functional IS/business unit committee. Last year, panelists suspected that the group didn't have much status in the business and urged Dawley to ratchet up its importance or replace it with IT/business liaisons. As it turns out, the committee now has broader and higher-level representation from the business units and has been elevated from a subcommittee to a full committee. Its mission remains the same—to align IS and business priorities and communicate those to the business units. And the mission for Federated Mutual's IS department will likely remain refining and implementing a high-performance IS-service strategy because, like most reengineering efforts, it's a work in progress. *–Richard Pastore*

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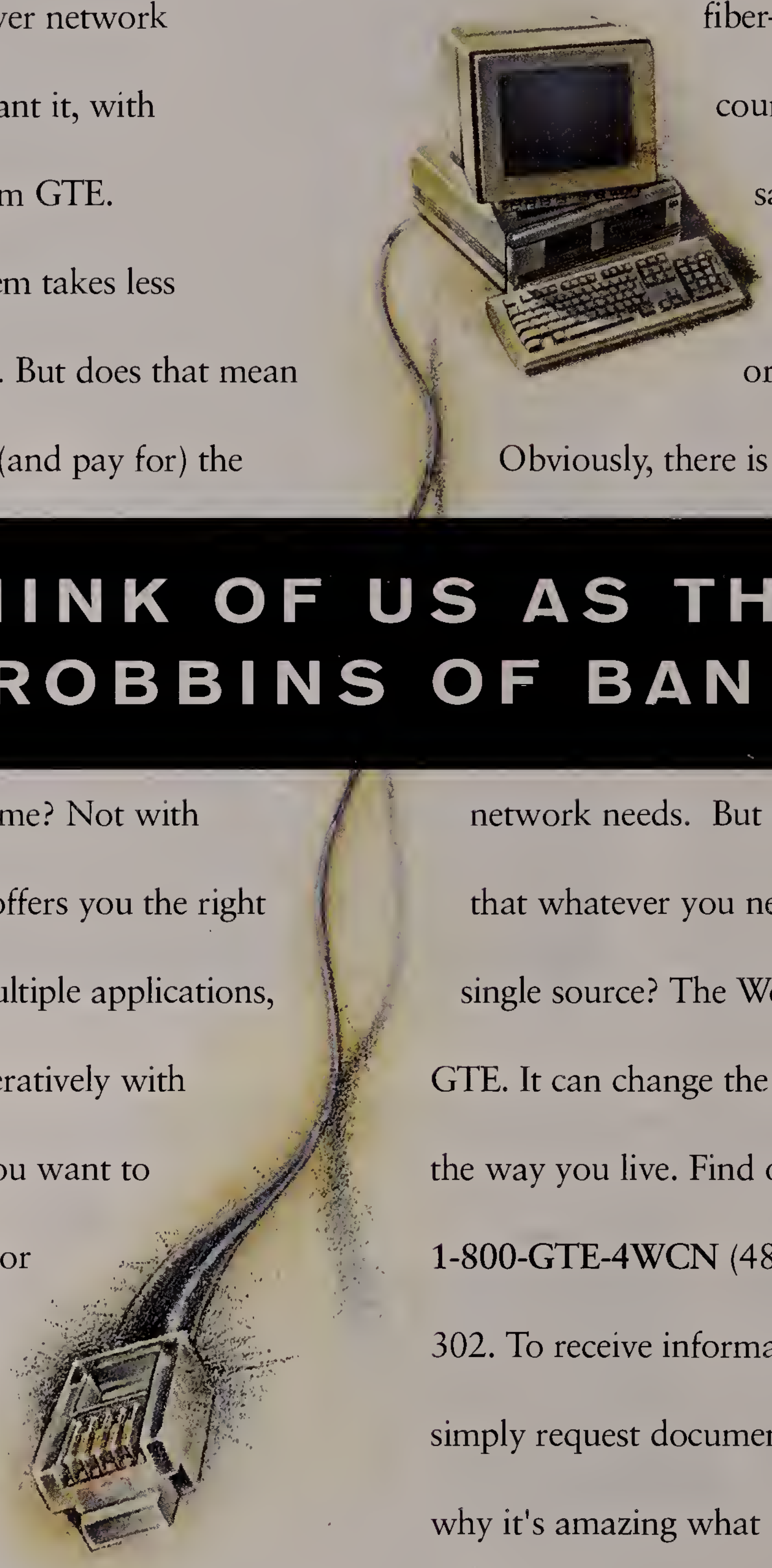

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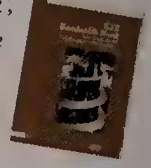

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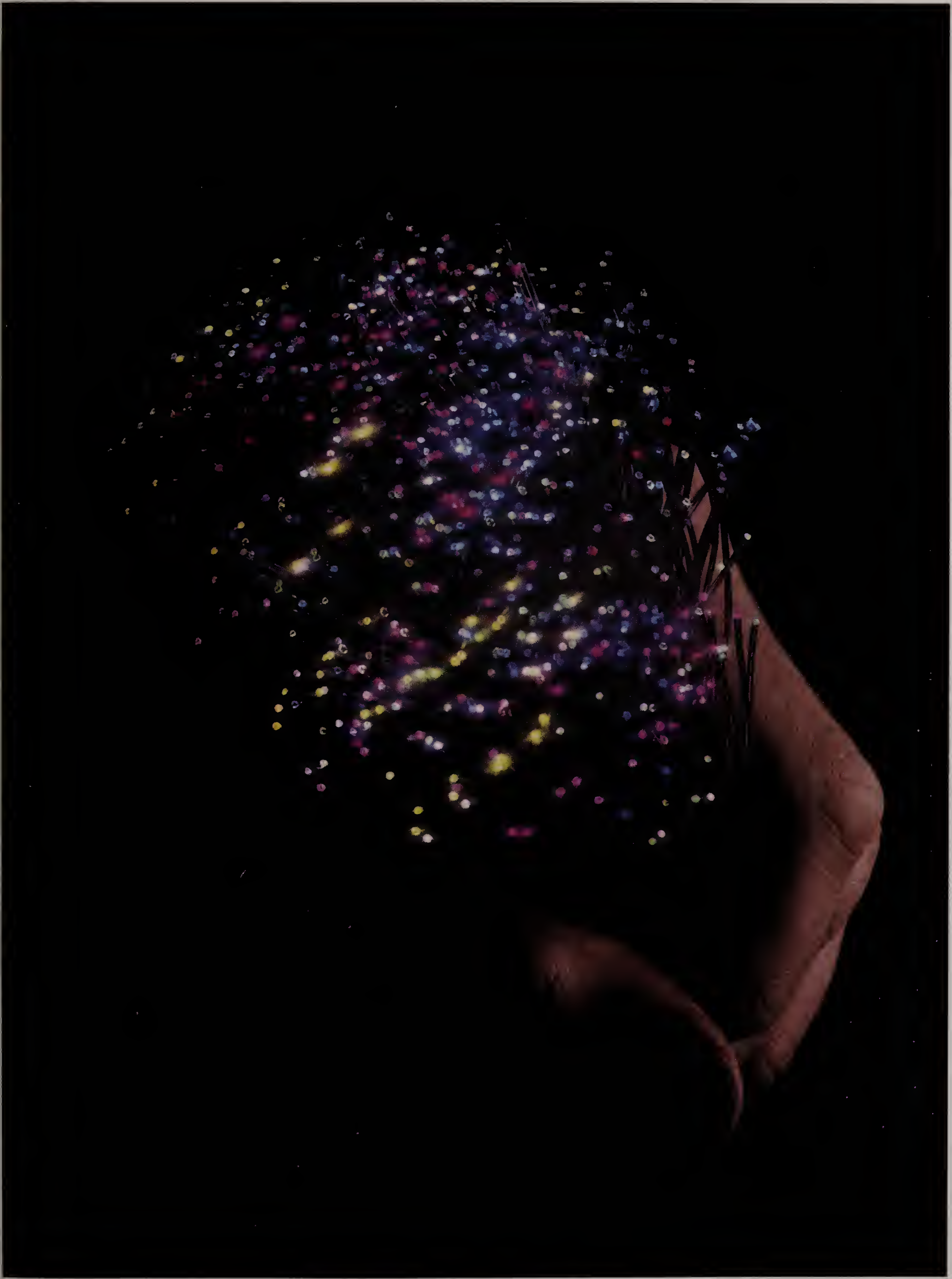

GAVAN TAYLOR: *"You don't want an esoteric technology that only a few people know how to use."*

PHOTO BY SUSAN LAPIDES

our legislature. We require that each agency project pay for its oversight service through a type of chargeback system resembling a fixed time-and-materials contract with my office. In this way, we attempt to portray the oversight function as a value-added service, not unwanted interference. This is a delicate balance that is maintained only by providing professional, structured and consistent service.

Avoiding the hazards of an underskilled staff is a thorny problem, particularly when technologies are changing so rapidly. But Massachusetts, like California, prides itself on its leading-edge technology business community, so who is more appropriate to bear the burden of Sunnyvale's skills/applications match than the private sector? Outsourcing client/server development or migration services to local technology firms, at the very least, will result in an assessment of current skills and will facilitate the development of an appropriate training curriculum for the future. And let's face it, Shawn, introducing a process of competition in a public-sector environment does wonders for staff productivity.

Regarding software, we have decided after consultation with our major user agencies that standards facilitate interoperability across the network while simplifying version control, maintenance and training issues as well. And again, we established standards within the IT Coordinating Council structure. Equipment procurement must also meet Coordinating Council standards, but we are growing more concerned about our spiraling desktop investment as the shelf life of each new box grows shorter. As a result, we are exploring some new leasing options.

Finally, Shawn, keep that old mainframe around as a server. This will mitigate risk, allowing the management of client/server problems by temporarily returning to mainframe operations if necessary. These days we should always have a fall-back position. I would emphasize again that risk management inherently requires coordination, and you would do well to use inclusion as your theme.

Gavan Taylor, *managing director of IS division and CIO, Putnam Investments, Boston*

I empathize with your concern about the risks of migrating from a mainframe to a client/server platform, Mr. Hernandez. Putnam Investments is in the midst of such a transformation. It is indeed a daunting challenge. Client/server applications require much planning and risk assessment. You have to think about many more things than you do in a mainframe environment and take nothing for granted.

There are a number of ways to minimize the risks of such a major project. Technology standardization across the complex will provide you with a greater chance of success. In the mainframe world, you have a central group in control of the technology. In a client/server world, many people have the ability to configure their own PCs, reallocate memory, move files around, etc. Therefore, standards and discipline are even more important.

It's sensible to keep the number of vendors to a minimum. For example, choose one relational-database vendor for the entire city. The more vendors you have, the more handoffs you have, together with increased training and more potential points of failure.

When choosing vendors, check their financial stability. You don't want to have a company go Chapter 11 the day you go live with its product. In addition, assess their support capabilities and find out if their products are familiar to a number of consultants. You don't want an esoteric technology that only a few people know how to use. If you choose a well-respected corporation with a stable technology, you're minimizing your risk. Also, use caution when choosing new products. You never want to predicate a successful implementation on the promise of a vendor's new software release.

I highly recommend using an automated project-management system to track task completion over time. This will make it easier to gauge how

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changing the timetable for a component of the project will affect the project as a whole. It will also help you schedule tasks for your staff and keep track of who is doing what. We use a product called Artemis by Lucas Management Systems of Fairfax, Va.

Hiring a credible consulting firm is a good way to fill in the knowledge gaps as you make this transition. Make sure to choose a consultancy that is stable, has low staff turnover and has extensive experience in client/server. You always want to insist on a knowledge transfer from the consultant to your staff so that your own employees derive the benefit of on-the-job training.

Ensuring that your staff is up to the task and has the necessary skills to complete the project will be a key concern. Now that we are completing a new trading system and pricing system, about 30 percent of our IS staff is familiar with client/server technology. All new hires are expected to have these skills. We also have a Graduate Trainee Program, in which we train recent graduates in Oracle Corp. products, Unix and Powersoft Corp.'s PowerBuilder. The graduates have tremendous enthusiasm as well as fresh, acquisitive minds and adapt well to the new technology.

Intensive planning can reduce a great deal of risk in a major development project. At Putnam, my department always starts new projects with a business sponsor. Both we and they understand why we are doing the project, its cost and the expected payback from the outset. There is a clear understanding of the critical factors necessary to ensure success. This reduces the risk of creating higher expectations than can be realistically met.

Your choice of the one-stop business permit center as the first system in the project is a good one. Such a medium-sized, standalone system makes for a fine first step. As you plan this project, look carefully at your disaster-recovery and business-recovery plans. Make sure disks and CPUs are mirrored. Assess where your key points of failure are and develop contingency plans. If possible, test the system in a parallel mode before putting it online. I wish you much luck and minimum risk in your migration efforts.

Panelists' Findings

- **Hire consultants or outsource to local client/server technology firms to augment staff skills. Insist that consultants provide on-the-job training for Sunnyvale IS workers.**
- **Standardize technology across the board as much as possible and keep the number of vendors to a minimum.**
- **Work closely with other department heads to reduce the risk of unrealistic expectations.**
- **Consider creating a commission of private-sector appointees to help establish standards, oversight procedures and funding priorities and to guide other IS strategy and planning issues.**
- **Find outsiders to conduct project oversight.**
- **Consider implementing an automated project-management system to track tasks in the migration effort.**
- **Establish citywide standards for client/server procurement (both hardware and software).**
- **Focus everyone on the same set of meaningful, user-defined measurables.**
- **Identify all cross-organizational interdependencies and manage the links carefully.**

John M. Hammitt, *president, J. Hammitt Group Inc., Hartford, Conn.*

According to Yogi Berra, "The future ain't what it used to be." Consistent with Yogi's observation, Mr. Hernandez, you are undertaking one of the most uncertain and risky IT transitions anyone can face today. This is because we now live in a world where pressures for radical change and restructuring, in both the public and private sectors, grow stronger each day. At the same time, new-technology developments are coming over the horizon faster and in greater numbers, intensifying everyone's expectations for rapid performance improvements.

To help deal with these pressures, as a former IS executive I developed five broad rules that come from some common threads running through commentaries offered by analysts of business, social, cultural and technology trends and from many of our colleagues. These rules are as follows:

For General Management: Constantly strive to do more with less through business restructuring, process simplification, continuous improvement and standards for exceptional quality.

For Marketing Management: Get closer to the customers, seeing your own world and its measures of success through their eyes.

For Manufacturing/Service Management: Create streamlined, flexible processes for producing the highest quality at much shorter cycle times, while searching out and using new sources of labor and materials.

For Technology Management: Routinely provide additional value in products/services by incorporating systems and data using new forms of information-processing technology as appropriate.

For People Management: Unencumber and develop the workforce, rewarding teams for results rather than activity, and rewarding individuals for growth through continuous learning.

Three of these rules stand out as opportunities for risk reduction in IS transitions such as the one you face

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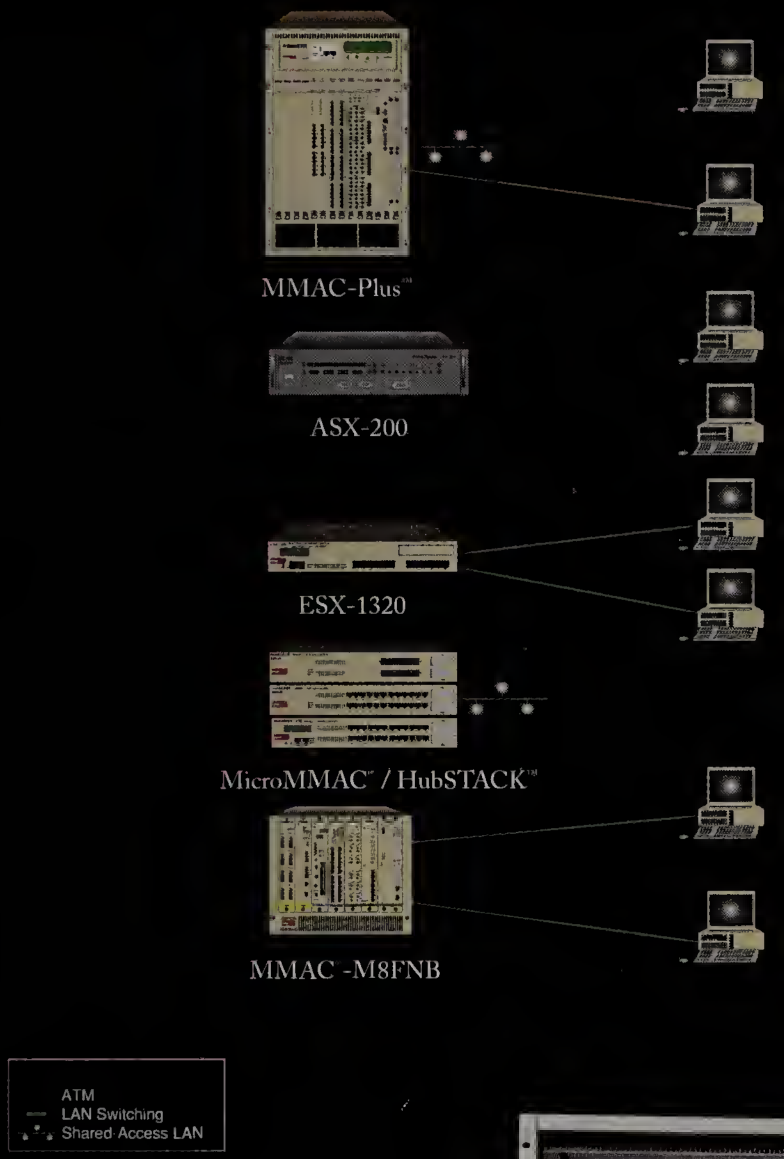

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JOHN M. HAMMITT: *"Having everybody focused on meaningful measures of success reduces risk."*

today. The first applicable rule, Marketing Management, focuses on using customers for measuring success. "Customer" certainly means internal customers who use information and IT to create new value for the organization. Customer also means the buyer (or public-sector receiver) of products and services from the enterprise. The key is to view your IS strategy/projects, and measure their expected contribution with a yardstick defined by your customers' needs.

Applying this rule to a systems strategy or project creates shared measures of success that keep all key people aligned and focused on getting meaningful results quickly. Such a focus on customer-measurable solutions creates a common team goal that can also sustain the team during those inevitable times when unpleasant surprises occur. Having everybody focused on meaningful measures of success reduces risk. This will encourage everyone to perform at their highest level, while making it easier to reach needed compromises when overcoming problems.

The second and even more essential rule for risk reduction, People Management, flows directly from being committed to getting closer to the customer. If we're not pursuing, investing in and building the strengths, skills and talents of each person in the organization, we'll have a weak foundation for creating and sustaining customer-measured value. The following are some ideas you should consider for starting to build a strong foundation of skills proficiency and organizational competency.

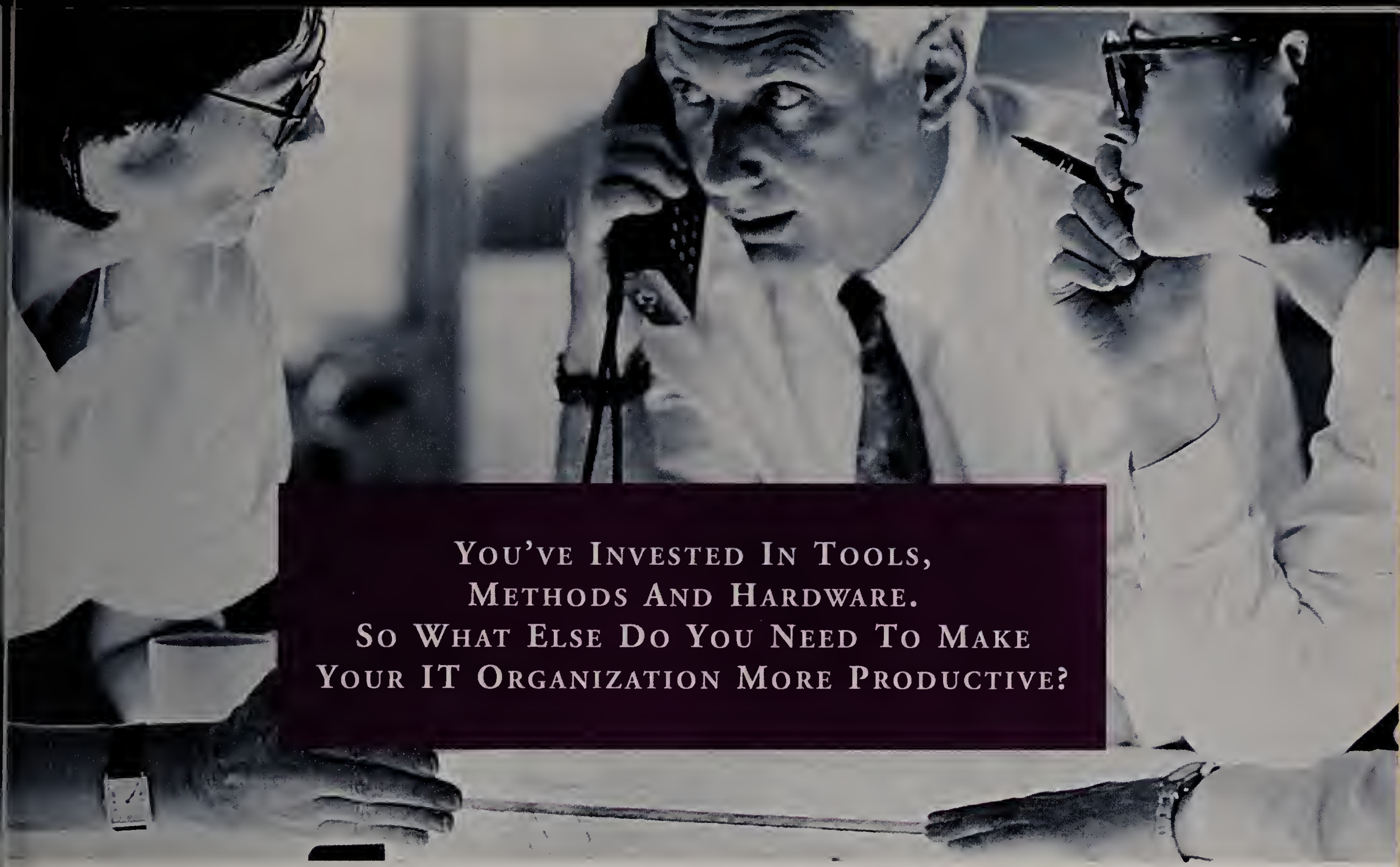
- Benchmark the skills needed for executing new strategies or projects, recognizing that today's new technologies require a vastly different approach for management practices, systems design, software development and infrastructure support.
- Conduct an objective and very detailed skills-assessment program across all areas, looking at proficiency in at least 40 to 50 unique skills for each position.
- Use the results of skills assessment to restructure roles and accountabilities and set new individual performance goals, recognizing that people successful in old skills are not always ready or able to quickly transition to new ones.
- Develop a transition plan that changes the mix of skills over a fixed period, with flexibility for the rate at which individual people develop. Use external assistance to augment or lead efforts for crucial time-sensitive work, thus also helping existing staff with on-the-job training.
- Incorporate the "softer" human issues such as listening skills, politics of change management, interpersonal communications, observing and respecting culture, etc., into all training and hiring programs.
- Establish tough but fair reward systems based on defining and meeting customer needs.
- Provide frequent, in-depth experience-sharing opportunities both inside and outside the organization.

The Manufacturing/Service Management rule can also reduce the risks of new IS projects. In the manufacturing world, there are rigorous management processes for designing, planning, building and delivering new products. Today, more than ever, we need similarly strong structure, discipline and process management for new IT efforts. Well-defined and detailed program-management processes are essential for data-driven design methods and systems design, development and deployment processes.

The discipline of program management establishes means for ensuring that all crucial cross-organization interdependencies—resource planning, systems development, new-technology infrastructure, organization-change preparedness, testing and deployment, etc.—are identified, communicated and managed. This approach recognizes that managing the links between interrelated projects is even more important than success in any single project.

The ideas behind these three rules—customer-measured success, detailed skills development and disciplined program management—will likely help reduce some of the risks in your systems transition strategies. CIO

PHOTO BY JEFFREY CAMP



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THE NEW I.S. ROLE MODELS

With information technology an increasingly intrinsic part of business operations, the role cast for senior IS executives is splintering, transmogrifying, regenerating. Now more than ever, there is no single CIO role but rather various models of IS organization and leadership.

BY ANNE STUART

When it comes to IS management, life isn't as simple as it once was. In recent years, as the use of information technology has grown more widespread and ingrained, permeating almost every aspect of every enterprise, the CIO's job has become increasingly sophisticated and complex. Add to that the ever more critical role IS plays in setting corporate strategy and keeping an eye on emerging technologies, and you've got a job that in many cases has grown far too large

ILLUSTRATIONS BY DAVID TILLINGHAST

for a lone executive.

For that reason, some organizations have begun slicing up top IS management into two or more jobs. While many CEOs, IS executives and consultants agree that it's time to divvy up the duties, there's little consensus about specific responsibilities, titles and organization. For instance, while the title of chief technology officer, or CTO, is gaining some prominence, the responsibilities of the person holding that title differ vastly from organization to organization. Despite this confusion, three basic models have begun to emerge.

Strategic/Tactical: The growing strategic role of IS has prompted many companies to hire CIOs more experienced in business or management than in hardware, applications or networking. Now some of those organizations are bringing in one or more senior technology managers to handle architecture, infrastructure and day-to-day operations. Typically, the top technology manager reports to, or is a peer of, the chief information executive.

Internal/External: In some organizations, one information systems executive focuses on internal IT needs while another looks outward. In this model, one official—often the CIO—handles operations, while the other—often called the chief technology officer—scans the horizon for new business opportunities or, in some cases, focuses on product research and development. Often, neither reports to the other; instead, they may report to the chief executive or chief financial officer, or to another member of the top management team.

Dispersed: This model, in which non-IS executives play a greater role in linking IS and business strategy, isn't yet widely used. But some consultants say it's evolving along with the next generation of business leaders. These young executives, who have grown up far more computer literate than their predecessors, will be able to actively evaluate IT's role in improving market share or boosting the bottom line, potentially eliminating the need for a separate CIO strategist. They'll also be able to develop many of their own applications. However, they'll still need technologists to handle hard-core systems oversight, infrastructure and telecommunications. CIOs will be relegated to a more-limited support role. Some observers take issue with this vision, predicting instead a growing role for the CIO as information strategist.

Model One

STRATEGIC/TACTICAL

"Five years ago, the head of the information systems division was very much a technologist through and through," says Beverly Lieberman, president of recruitment firm Halbrecht Lieberman Associates in Stamford, Conn. "Today, the CIO is becoming more and more of a business strategist."

She cites examples of companies that pluck their CIOs from user areas, perhaps promoting a senior marketing, finance or strategy official with some interest or expertise in IT. For instance, she says, Kraft General Foods tapped planning executive J. Bruce Harreld to fill its CIO spot (Harreld has since become president of Boston Chicken; although the fast-food chain employs a full-time CIO, Harreld remains deeply involved in IT decision making).

As these CIOs function increasingly as strategic business partners, companies have no choice but to outsource the technical issues and day-to-day operations—or hire someone else to handle them. In some firms, this role is defined by the title chief technology officer.

While Lieberman's firm has received almost no inquiries from employers seeking CTOs per se, it has seen rising demand for two related positions reporting to the CIO: chief telecommunications officer and chief technology architect. "I've done searches in the past year for both of those positions," she says. "Large service-oriented companies are willing to pay a premium for them."

Typically, she says, the telecom executive fills "a major strategic and tactical position in

"The CIO won't have all of the skills to make those decisions and will rely on the CTO types to handle telecommunications and architecture." *–Beverly Lieberman*

the organization, cutting through all MIS functions." The technology architect, working at the same level, helps plan the strategy for the company's technical and business architecture.

Lieberman expects demand for technology-oriented managers to grow if companies continue seeking CIOs from business backgrounds rather than technical ones.

"If that happens, it makes sense that you're going to need this CTO type of person to be the key representative of the technologies in the organization, someone who understands how to build systems and manage them," she says. "Whatever you call it, you'll need that person because the CIO won't have all of the skills to make those decisions and will rely on the CTO types to handle telecommunications and architecture."

Some companies developing this model have flipped the titles, with the CTO filling the more strategic role. At Meridian Bancorp Inc. in Reading, Pa., William Fenimore, a veteran banking executive appointed CTO late in 1994, oversees Bruce L. Ressler, who, as president of Meridian Automation and Technology Corp., essentially serves as CIO of the diversified financial services company.

Ressler's service subsidiary had, for several years, overseen technology, technical operations, systems development, maintenance, telecommunications, network management and architecture. In September, Meridian appointed Fenimore, whose background is in planning and bank management, to the new job of CTO, making him responsible for the overall technology strategy and investment.

"As I view this, [Ressler] continues his tactical efforts, making sure we have what we need to deliver technology through the business groups in a cost-effective way," Fenimore says. "My role is much more at a strategic level, to make sure we understand the requirements of the business and what technology is needed to position us for the future."

That involves understanding, from a business perspective, what differentiates the 320-branch bank chain from its competitors and how rapidly changing IT can contribute to its goals. "Technology investments are going to get steeper and steeper, and we're going to have to be more careful about how we make those investments," Fenimore says.

Elsewhere, the titles follow a more classical model. When Bud Mathaisel, now director of the Ernst & Young Center for Business Innovation in Boston, was CIO at Walt Disney Co. several years ago, he had reporting to him a CTO responsible for new technology research and development, technology enablement and process redesign and control. And sometimes a CIO may oversee the IT business strategy while an individual division or project requires its own CTO. That's how Disney now operates, with a companywide CIO and a CTO for animation projects who reports through Disney's film division rather than back to the CIO.

MODEL TWO

INTERNAL/EXTERNAL

In this model, responsibilities split along inside/outside lines. One IT executive might manage internal IS architecture, infrastructure and daily operations, while the other tracks emerging technologies, commercial opportunities or research and development activities. Either, both or neither may have strategic responsibilities.

There isn't a formula. Companies using this approach tend to tailor the jobs to the individuals, their companies and their industries.

At Unisys Corp., CTO Ronald K. Bell oversees product architecture and operations while

Martin views the CIO's position as "basically functional," with the emphasis on infrastructure. "The focus is primarily inward. You're looking outward for technology but bringing it inward to do what you already do." *–Edith W. Martin*

the company's CIO focuses on in-house architecture. "I spend a lot of time looking at how we would fit systems together for customers or clients," says Bell, appointed to the new position at the Blue Bell, Pa., high-tech company last year. Unisys's CIO reports directly to the CEO, while Bell reports up through the computer systems group, "with a dotted line to the president of the company."

At Trecom Business Systems Inc., an Edison, N.J.-based systems integrator, the chief financial officer also serves as CIO, handling IS operations and business strategy as well as finances. Meanwhile, CTO Shailendra Jain remains in charge of the company's architecture and selecting vendors. A third person, an MIS director reporting to the CFO, actually oversees the daily IS operations.

Like many other CTOs, Jain spends a significant amount of time gazing at the technology horizon, freeing the CIO to concentrate on current business demands. Jain monitors areas ranging from imaging to the Internet, identifying developments that might affect the company's products, markets or customers. He describes his role as technology surfing: "Part of our business-development strategy is to catch the wave before it comes. I not only have to look ahead for the new wave, I have to stay on top of the one I'm on before I hit the beach."

These models need not be mutually exclusive. Jain's position combines elements of both external focus and technology implementation. When there is this mix, he says, the technology and information executives often function as teammates in a relay race as well as partners working side by side. For instance, in business process reengineering, "a CIO is suited to establish the reengineering effort, to champion the reengineering effort. Then the CTO has to come in at some point to implement it."

In any case, Jain says, the arrangement can work only if both officials report to one boss. "The CTO and the CIO have to work for the same person," he says. "They're like Siamese twins." Other companies with CIOs have added a CTO-type position to oversee the company's involvement in the Internet, the World Wide Web and other online activities.

Few are as qualified to discuss the issue as Edith W. Martin, who has, in the past year, been both a CTO and a CIO. Now executive vice president and CTO at Sallie Mae, the student-loan provider in Washington, Martin previously served as vice president and CIO at Washington-based Intelsat, which owns and operates global communication satellites.

In general, Martin views the CIO's position as "basically functional," with the emphasis on infrastructure. "The focus is primarily inward," says Martin, who has also been an IT executive at The Boeing Co., the U.S. Department of Defense and Control Data Corp. When CIOs operate externally, she says, it's typically in search of new technologies to support the internal infrastructure for product lines or services. "You're looking outward for technology but bringing it inward to do what you already do."

Generally, Martin says, CTOs combine both business and IT acumen, driving technologies in directions that boost profits. Like Jain, she says that CTOs must track emerging technologies. "They have to keep one eye on the next wave, the other on the bottom line."

Martin's most recent achievements reflect those views. As CIO at Intelsat, she led a one-year effort to renovate satellite launch and control facilities, install a 150-computer client/server environment, build a new graphical network and develop a ground-network control system. She also consolidated all IS activities, upgraded in-house computing and developed a computing strategy and a five-year IT development plan.

At Sallie Mae, Martin's current responsibilities include overseeing a $65 million imaging contract and construction of a $90 million state-of-the-art data and command center. She also oversees several high-tech subsidiaries and develops and acquires new technology-driven businesses.

Ironically, when Sallie Mae recruited Martin last year for the new CTO position, she initially wasn't interested because, as described, the job sounded more like the CIO jobs she had already held. She convinced the organization to expand the position to give her the bottom-line influence she sought.

In the future, IS executives will function as consultants but not as strategic partners. "As CEOs become aware enough of technology, they won't need such senior alter egos." *–David Shpilberg*

MODEL THREE

DISPERSED

But both these models could gradually disappear as a new generation of computer-savvy CEOs moves up through the ranks. In the short term, five years or so, many companies will add a CTO to their ranks, says David Shpilberg, national director of Ernst & Young Information Technology Management Consulting Services in New York. But, he predicts, in 15 years, both CIO and CTO ranks will dwindle as IT literacy becomes an increasingly important part of every executive's resume. In those situations, Shpilberg says, IS executives will function as expert advice givers and consultants but not as strategic partners. "As CEOs become aware enough of technology, they won't need such senior alter egos," he says.

In addition, "business units are finally taking responsibility for the implantation of technology into their main lines," Shpilberg adds. "If that's happening, it's irreversible. Once a business unit goes over to taking responsibility, it won't go back."

To survive the transition, IS executives—by any title—must prove their value by gaining market share through the use of technology—in other words, become more externally focused. "Those who do that are the ones who are going to keep their jobs," Shpilberg says.

Mathaisel also predicts the dispersion of the strategic part of the CIO's role out to general business executives. "Right now, executives need an intermediary, an IS executive, because technology remains too complicated," he says. "But that will change in the next few years." However, Mathaisel's future scenario differs from Shpilberg's in one important point. "I see the role of CIO changing to chief infrastructure officer. People will write and manage their own applications without IS; the CIO will just provide the architecture.... For businesspeople, using IS will be almost as easy as using the phone on your own is today."

As a current example, Mathaisel cites the Internet, where many users with little IT experience are learning to retrieve information or produce their own graphic home pages on the World Wide Web. "People who get on the Internet haven't a clue how it works, and they don't care," he says. "They get on and navigate without much help. Yet somebody created the architecture and the technologies and standards."

For that reason, he says, technology-oriented IS executives are likely to continue moving along the same path, while those straddling the business and IS functions are likely to see their job responsibilities change dramatically in the future.

One way that could happen would be for CIOs to fully accept the mantle of "information" officer. Businesses will always need strategists with an information perspective, according to management guru Peter F. Drucker. In the 21st century, Drucker predicts, a corporation's most important executives will be its CFO, responsible for the flow of money, and its CIO, who will manage the information flow. For that reason, he warns IS executives against focusing too much on technology at the expense of information.

Drucker, who is Clarke Professor of Social Science and Management at the Claremont Graduate School in California, says it's no longer enough for companies to know how to produce and manipulate data. To retain a competitive advantage, companies must be able to distinguish data from information and know how to determine information's value. IS executives—by any name—who enable that task will be providing critical value to their organizations. CIO

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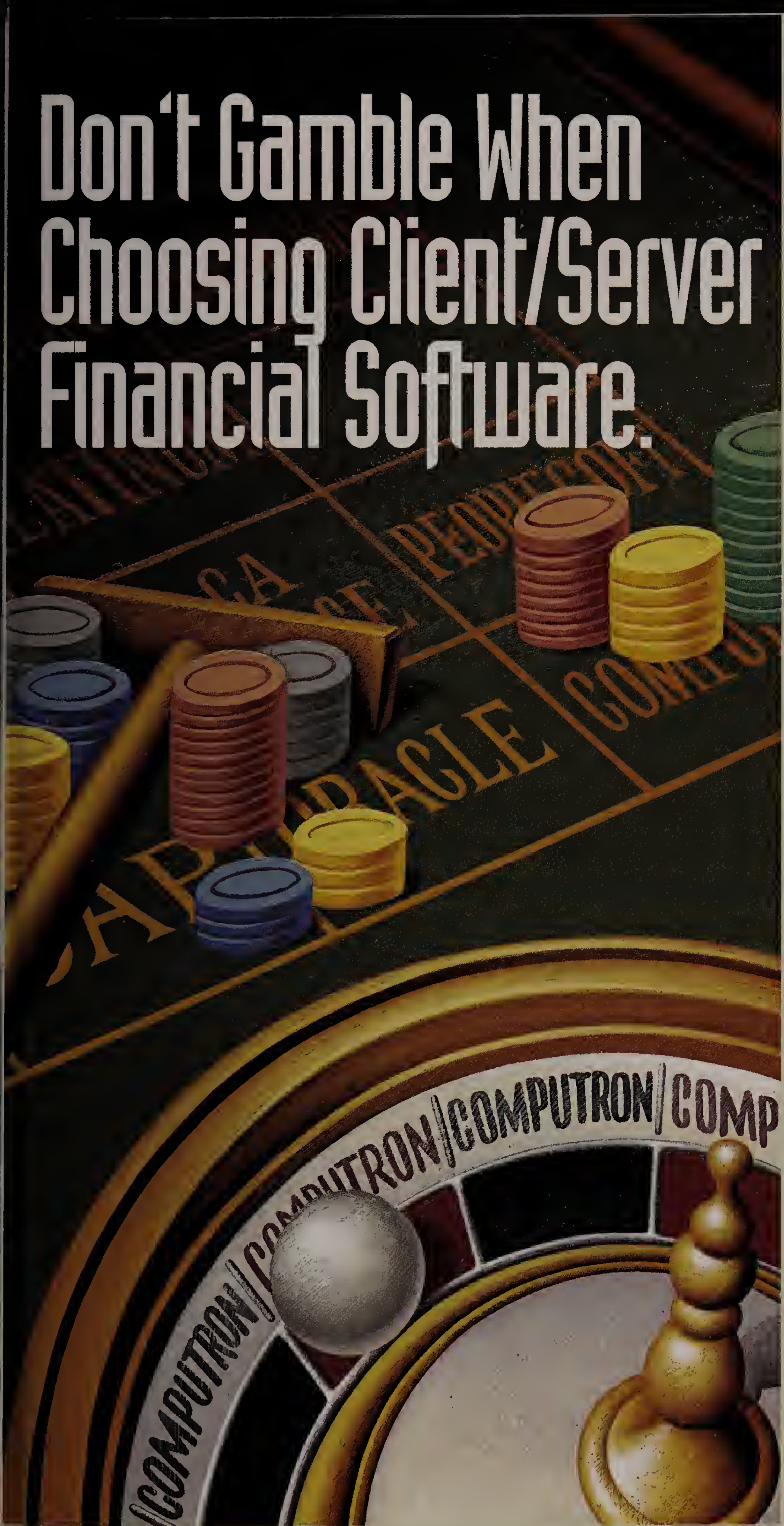

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Altered States

When off-the-shelf software products don't quite meet an organization's needs, customizing a package can be a good solution. The key is letting business requirements drive the decision—and handling the code with care.

BY JOHN EDWARDS

Customizing packaged software has often been compared to hot rodding an old jalopy. By the time one has finished replacing the engine, transmission, suspension and various body parts, very little remains of the original vehicle. The customizer has, in essence, built a new car from the ground up.

Developers who adapt packaged-software products to meet the specific needs of a department or organization often find themselves in the same position as the backyard mechanic. Over the months and years, as one change after another is piled onto the software, the program eventually comes to bear little resemblance to the original product. In retrospect, it becomes apparent that the organization has sponsored the step-by-step development of a custom program.

Still, while it is possible to get carried away with a software-customization project, the prudent modification of an off-the-shelf product is often the best course of action, particularly when compared with the trouble and expense of developing a solution from the ground up. Customized packaged software occupies the nether world between off-the-shelf products, such as Lotus 1-2-3 and Microsoft Word, and custom-developed applications and tools created by in-house developers or outside consultants. Organizations usually find that when developed with care and forethought, even extensively customized software will function effectively and flawlessly, with most end users unaware that they are working with a modified product. The key is the care and forethought: Customization work that's performed sloppily and haphazardly will almost certainly lead to problems that will make management wonder why they ever decided to tinker with a perfectly good software product in the first place.

ILLUSTRATION BY KAZUSHIGE NITTA

Robin Rowe, president of Rowe Technology, a software-development and training company located in Carmel, Calif., says packaged-software customization is largely a question of cost versus business advantage. "You go with the solution that minimizes cost while maximizing profit," he says. "As with most business decisions, neglecting hidden costs is a common and expensive mistake. A study of the costs, gains and risks is needed in each situation."

Rowe suggests that any organization thinking of modifying a packaged-software product carefully weigh the motivations for the decision. "Is the current software too hard to use? Will the [modified] software make the company more productive? Will it allow us to do things we can't do now? It's the same arguments that drive computerization in the first place," he says.

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mately taken—off-the-shelf packaged software, customized packaged software or full custom software—the risks involved are substantial, Rowe adds. While sticking with unmodified commercial software may seem to be the safest path, the organization that does so risks not having its needs fully met. Yet going with a customized package or full custom software is fraught with perils, too. "A system that fails is likely to wreck the business, so being too leading edge is dangerous. On the other hand, a state-of-the-art system that works is a significant business advantage," says Rowe.

Philip Anderson, an associate professor of business administration at Dartmouth College's Amos Tuck School of Business in Hanover, N.H., notes that packaged-software customization runs the gamut from a simple spreadsheet macro or a no-frills front end for Lotus Notes to sophisticated C-language routines that add new features to a proprietary application. But he says that whether a project is simple or complex, the fundamental reason behind the customization should always be the same: boosting productivity while lowering cost.

The managers in charge of a customization project must think strategically, not just technologically, Anderson says. "The need to customize is a business decision," he explains, adding that the case for customization must always hinge on the organization's ability to leverage a "proprietary competence." In other words, creating customized code should only be considered when it has the potential to enhance an asset that's unique to the organization. That asset should be so valuable that the organization wouldn't sell it to a competitor for any price.

As an example, Anderson presents the case of a company that's known to the public for its superior customer support—something it alone offers. "In this case, management should ask itself if there's a way it can create customized applications that will let it leverage the handholding that it provides. It's not an IT-based decision, but IT can help the company to leverage its advantage." The need to think strategically is a key reason why the CIO should be an integral part of the management team, he adds, "instead of stuck off in some ghetto where people throw projects over the wall."

Creating customized code should only be considered when it has the potential to enhance an asset that's unique to the organization.

In the case of nonstrategic generic solutions, where many companies might benefit from a particular software modification that the commercial market doesn't currently provide, Anderson suggests that the organization contract with an outside developer to create a product that can be used industrywide. "Let that third party offer the product across a larger customer base and cut your unit cost," he says.

David Cahn, director of business applications for Computer Associates International Inc., the Islandia, N.Y.-based software publisher, believes that the need for packaged-software customization is being driven by end users. According to Cahn, organizations are finding themselves pressed to deliver an ever-widening array of solutions to an increasingly demanding base of end users. "With traditional applications, the mainframe or host-based system was the center of the universe. That has changed dramatically with the PC," he says. "Now the user is the center of the universe, and he or she is demanding applications that incorporate audio and images and other custom features. End users are also demanding new and flexible query, reporting and analysis capabilities, often in [combinations] that are unique to small groups of users."

Organizations that decide to customize packaged software can choose from a wide range of development tools. Many applications come with their own built-in environments, ranging from simple macro languages to complex programming structures. Database programs, in particular, are helpful in allowing organizations to build their own solutions. Spreadsheets, telecommunications applications, word processors and numerous other products also allow organizations to create code that will modify a program's performance and/or appearance, often in ways never envisioned by the product's publisher.

Rowe believes that databases, because they are highly structured, make an ideal platform for creating customized applications in a variety of areas. "When you build an application, you're usually trying to get control over things so that people can't accidentally delete records out of your customer database or make other expensive mistakes," he says. "In that respect, databases are an ideal choice." A mini industry has grown around the database market, he notes, allowing developers to draw from a deep well of support products, including debugging programs, books, seminars and various types of consultants. "When you hit a rough spot, it's nice to know that you're not alone," he says.

But while the tools provided with databases and other applications make a suitable development platform for many types of solutions, organizations with unique or extensive customization needs generally require more powerful and sophisticated development tools. The software-tools market provides a wide array of products that are designed to meet developers' needs, from relatively elementary Basic language toolboxes to sophisticated C++ development packages. Which tool to use depends on the type of software being modified: Basic products are typically most useful for front ends and other add-ons, whereas C systems are generally geared to advanced projects that require developers to enter the heart of a program.

Object-oriented technology, which offers developers prewritten modular chunks of code that can be stacked

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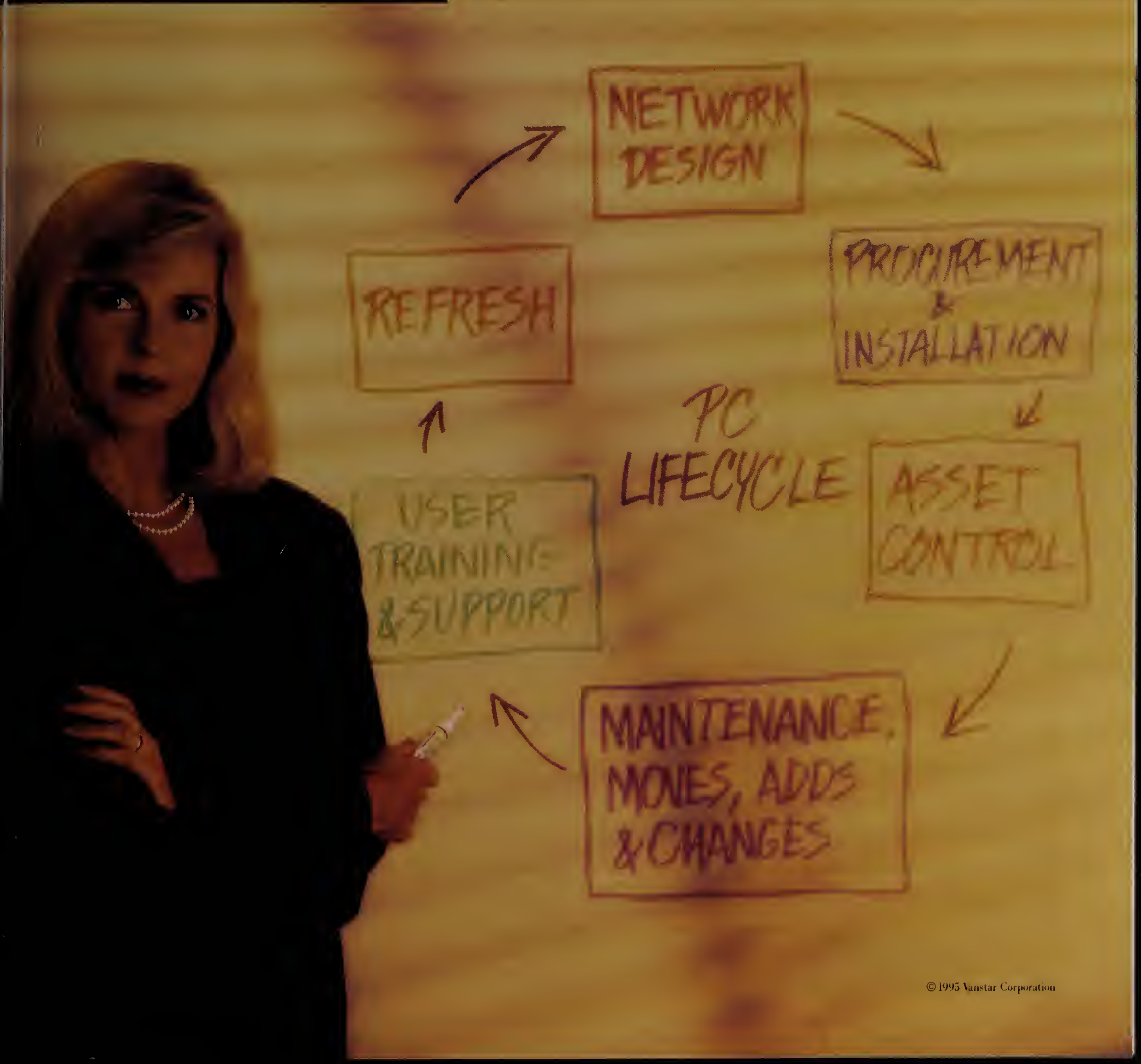

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like building blocks, is making it easier for organizations of all sizes to tackle both big and small customization projects, says Cahn. "The easiest way to modify code is not to write any code at all," he says. "If you can reuse something that already exists, you gain tremendous value." But even traditional development systems are getting easier to use. "They are becoming template-driven, lessening the learning curve and promoting consistency across the enterprise," says Cahn.

A critical choice confronting any organization facing a customization project is whether to perform the work in-house or to outsource the coding to an independent developer. According to Rowe, the decision usually hinges on the scope of the project and the size of the organization. "Most big companies have teams of developers they can assign the work to, so they'll develop both major and minor projects inhouse. Small and medium-sized firms may decide to handle a smaller project internally but will usually give larger jobs to somebody else."

Rowe feels that word of mouth, including recommendations from business colleagues, is the best way to find independent developers skilled in a specific customization area. He also believes that managers should pay visits to developers on their home turf. "Go to a users' group meeting," he suggests. "If you're in a city of any size at all, you'll find a group that applies to your need." Rowe notes that users' groups attract large numbers of independent developers, and that by viewing members' presentations over a series of meetings, a manager can tell which individuals know their field and which are simply trying to make a fast buck. "All consultants sound good in an interview; it's something they're all very skilled at," he notes. "The only way to judge them is to get them in a situation where they're unaware you're evaluating them."

Anderson points out that if an organization is customizing software that contributes to its core competitive advantage, it will most likely want to stick with in-house developers. "Whoever programs the application will end up learning a tremendous amount about the business," he says.

> **"The easiest way to modify code is not to write any code at all. If you can reuse something that already exists, you gain tremendous value."**
>
> *–David Cahn*

"You want your own programmers to be intimately familiar with those things that differentiate you from your competitors. You want to develop skills that your people can keep building on, and they won't get that experience if you outsource the work."

Anderson also observes that relying on outside developers will require finding a firm that's willing to put up with a steep learning curve; in addition, once that firm has been found and trained in the nuances of your organization, you must realize that it will hold a substantial portion of your organization's soul in the palm of its hand. "You're stuck with a monopoly supplier," he says.

Whether created in-house or by an independent developer, customized software generally offers its biggest paybacks in the early stages, Rowe says, when organizations first begin deriving benefits from the adapted application. "Things sort of plateau after a while," he says. "The easy problems are usually solved first; it's the 20 percent that's left that's really nasty." As a result of stubborn obstacles encountered in later development stages, he adds, many organizations leave their customization work only partially completed. "That's a danger because it's in the final parts of the work that the software's long-term usability and reliability attributes lie."

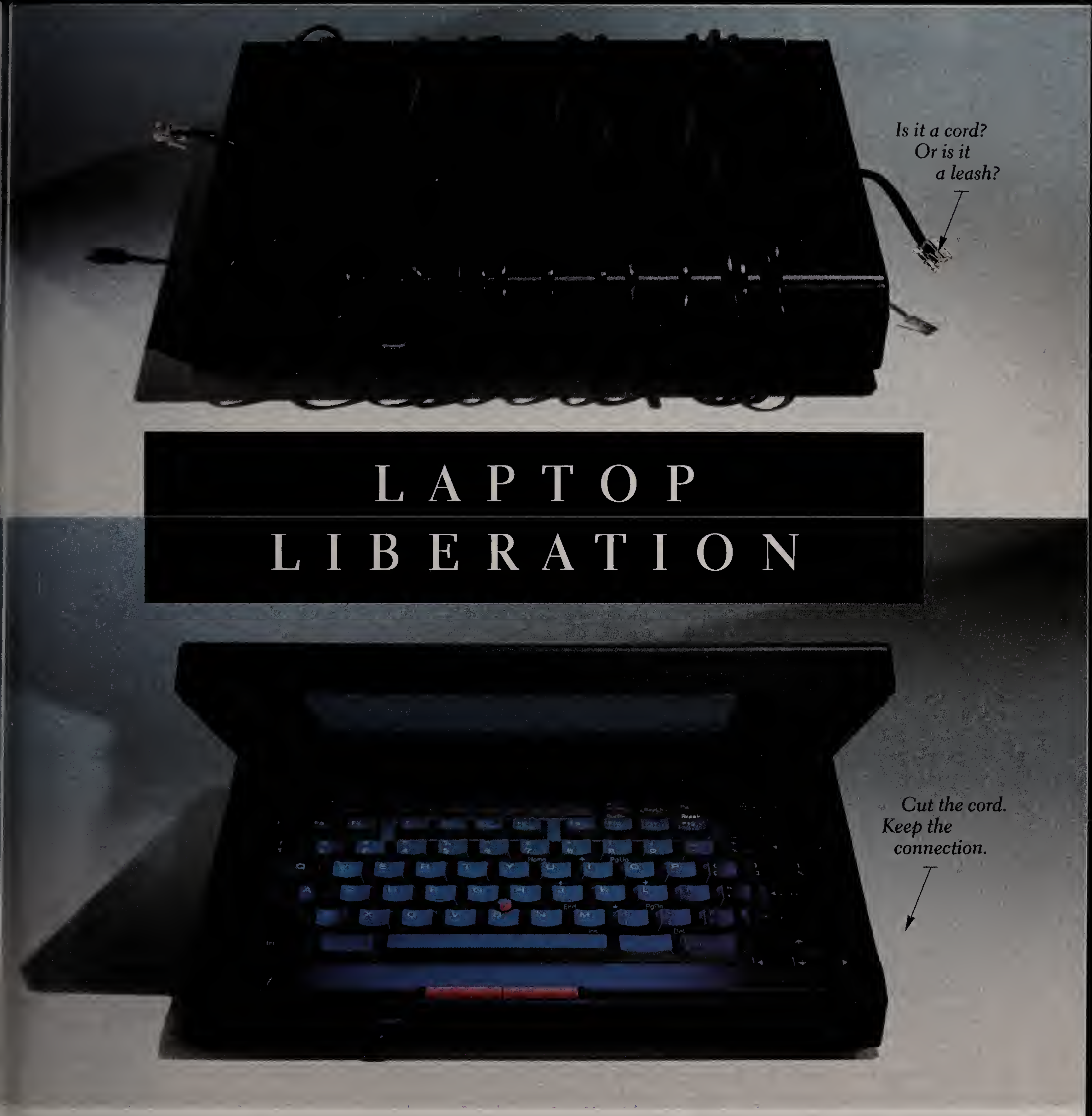
According to Rowe, maintenance should be a concern for any organization pondering packaged-software customization, but the issue isn't as critical as for firms that build solutions from the ground up. "Customization projects are usually small enough that it's not a dire problem," he says. "Typically, there's not going to be over 20,000 lines of code. In the worst case, that's something that can be coped with just by searching through the code. It's something most firms can live with."

Cahn adds that the increasing use of object-oriented technology and its more easily understandable modular structure are making maintenance less of a burden. "Object-oriented code is generally easier to manage and update," he says.

While packaged-software customization is currently a widespread practice, Bryan Fukuda, an analyst with Dataquest Inc., a San Jose, Calif.-based market-research company, believes that the method will gradually vanish as the software industry evolves and matures. "A lot of the customization opportunities that were present five or six years ago just aren't there anymore," he says. Fukuda notes that as software publishers continue to develop products that can be placed into increasingly narrow market niches, most organizations will be able to find products to meet even the most arcane needs.

Before making the decision to plunge into customization, Fukuda suggests that managers check relevant trade publications for information about available niche products. "Lots of vendors advertise in trade publications that target their audience—medical-software publishers in medical publications, for instance," he says. By thoroughly researching the market before making their decision, he adds, most managers can save the time and expense of developing customized solutions. "It pays to look before leaping," he says.

John Edwards is a freelance writer based in Mt. Laurel, N.J.



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Merit). Yes, after years of preaching the desirability, the inevitability, the beautiful buzzwordy bounty of change, change, change, I, Ezra Poundcake, will speak its name no more. Like the pumped and powerful Keanu Reeves of *Speed,* I must boldly leap from the madly careening bus of reengineering into the driver's seat of a whole new bandwagon.

So listen friends, and hear me well. The *new* watchword of the '90s is *stasis*. Flexibility is out. Rigidity is in. The only thing better than stagnation is downright paralysis. To quote, once again, the prophetic words of Great Grandma Poundcake: "If it moves, shoot it."

Really, it makes sense if you think about it. After all, even those *other* gurus are always carping on the fact that most people resist change. Well, aren't most people usually right? Isn't that the foundation for our whole system of government? By thwarting the will of most people and attempting to impose change upon them, are we not, in fact, acting like *Stalin*? Did anyone ever wonder why the cover of *Reengineering the Corporation* is that very assertive shade of *red*?

Yes, people have good reason to hate change. All you have to do is examine the watershed events of the 20th century to understand that most change has been change for the worse. The most obvious example is the substitution of Dick Sargent for Dick York as Darrin in *Bewitched*; the fans were not consulted, and many of us bear the scars to this day. Less traumatic, perhaps, but just as badly managed was the introduction of a new Lionel partway through the 10-year run of *The Jeffersons*. (See my article "Moving on Up to the Big Time: The Entrepreneurial Model of George Jefferson" in *The Harvard Business Review*, February 1995.) Clearly, corporations have not learned the lessons of history.

Unfortunately, while the wisdom of freezing the corporation in place should swiftly become apparent to most organizations, it may take a while for the public to catch on. After all, we've been telling them for years that innovation is good; that *their* needs are actually important, and that companies that meet those needs are somehow *better* than others. Reeducating customers to understand that just because Saturn delivers exceptional quality and service doesn't mean it's better than AMC—just more stuck up—will take a while. And in the meantime, companies will have to figure out how to appear to be moving forward while bringing real improvements to a standstill.

All those annoying "change agents" and "champions of change" will have to take a hike and be replaced with the kind of folks who get testy when the corporate cafeteria switches to seasoned croutons in the salad bar.

Fortunately, it can be done. And I know how.

I got the idea about a year ago, while driving home from a Dom Deluise retrospective at the local cineplex. This was around the time that Levi Strauss was introducing its customized-dungarees service: Store personnel would measure customers electronically, then transmit that information to a factory in Tennessee, which would produce a perfectly fitted pair of pants. (Unfortunately, the service is currently available only for ladies. Although I have been told I look rather fetching in a nice pair of dungarees, the Poundcake physique has a number of subtle peculiarities—75 percent of them hereditary—that make off-the-rack and even odd-lots shopping difficult.)

At any rate, I was listening to the radio, and an ad came on for another company's dungarees, claiming their staff had traveled around the world measuring thousands of people (presumably with their consent) and had used that information to create products that would somehow fit any body shape. The implication was that these dungarees were comparable to Levi's customized product—that customers could enjoy the fruits of technology without the company actually having to invest in sophisticated machinery or IT.

Sometimes it can happen like that. You're driving down the interstate in your Pacer station wagon and a whole new paradigm lands in your lap like a Frisbee from the gods.

Implied technology! Why spend a fortune on unwieldy client/server projects and elaborate cross-functional database systems when you can just sort of suggest you've got all that stuff? Implied technology works because people don't really understand technology, but they know it's supposed to make their lives better. So, all you have to do is tell them you've made their lives better and they assume you must be using technology!

Remember the *I Love Lucy* episode where Lucy and Ethel wanted Parisian gowns but were perfectly satisfied when Ricky and Fred presented them with potato sacks in designer boxes? Substitute a voice-mail system with dozens of options for the gowns and a minimum-wage employee who makes convincing beeping noises and can write fast for the potato sacks and voila! Implied technology in a nutshell!

Here are a few other examples of implied technology:

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money in point-of-sale systems and other elaborate methods for capturing customer data, hire teenagers to hang out at the Jiffy Mart after school. When people buy your products, have the teenagers follow them home and root through their trash.

Many organizations implement elaborate systems that allow service representatives to instantly call up exhaustive files of customer and product information whenever someone needs help or wants to place an order. The same effect can be achieved by staffing your customer-service department entirely with psychics.

Obviously, such a dramatic shift in focus will require some significant staffing changes. All those annoying "change agents" and "champions of change" will have to take a hike and be replaced with the kind of folks who get testy when the corporate cafeteria switches to seasoned croutons in the salad bar. And while you'll still need a CIO, he or she will serve more as a chief *illusion* officer, charged with leveraging nontechnology solutions to help organizations provide excellent customer deception.

> **While you'll still need a CIO, he or she will serve more as a chief *illusion* officer, charged with leveraging nontechnology solutions to help organizations provide excellent customer deception.**

Of course, you're bound to run into problems. Forbidding members of empowered teams from ever seeing each other again and paring the IT budget down to whatever's left over from last year's Christmas party may spark protest from those whiny reengineering zealots. And when that happens, Ezra Poundcake is here for you. My new consultancy, The Poundcake Group for Old Ways of Thinking About New Problems, is staffed by a team of idealistic young paradigm busters—fresh out of high school and uncorrupted by the twin evils of education and experience. Our mission: to wipe out change in this lifetime. So call now, and I guarantee that together we can stop your organization in its tracks. CIO

Ezra Poundcake is the former crossword puzzle editor of TV Guide *and the author of* My First Business Book, *with* CIO *Senior Editor Leigh Buchanan. He has many friends who work in companies.*

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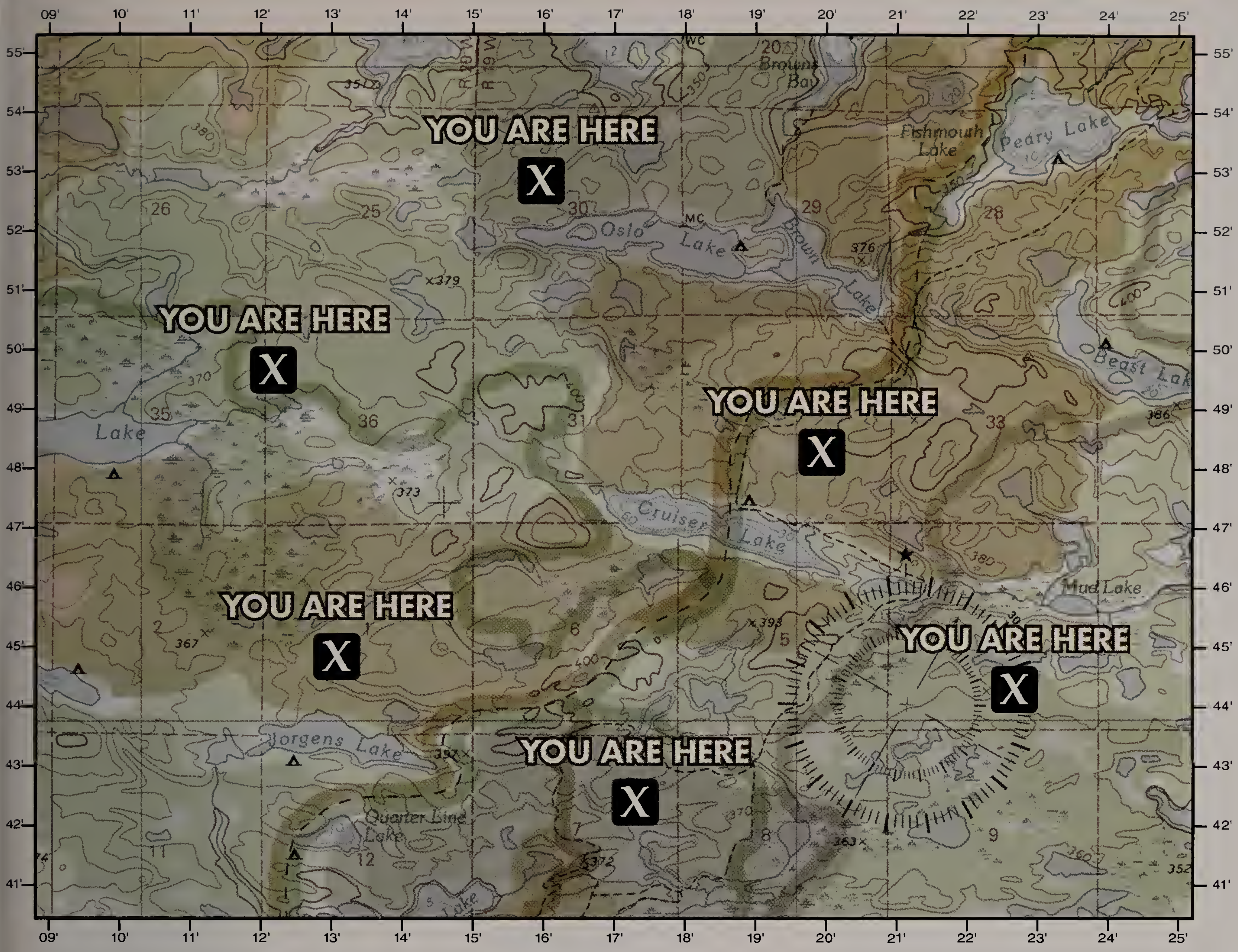

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The Technology Tease

It's time to bring the wheels of change to a grinding halt, and that means you can forget all that powerful, enabling technology. As Ezra's brand-new consultancy can show you, the power of suggestion is your new best friend.

BY EZRA POUNDCAKE

My great grandmother, Sara Lee, was a wise woman, and I well remember the wisest words she ever spoke. I was a mere babe at the time, a prattling child of 4 or 5 playing consultant with my little friends in the backyard. Great Grandma Poundcake was sitting at our picnic table, cutting out pictures from magazines to paste on light-switch covers (for she was an artist as well as a sage), and as I romped by she reached out and grabbed me with her bony old hands and plopped me onto her bony old knee and she said to me, "Ezra, sometimes the hardest thing to change is your own mind."

Her words have come back to me untold times over the last few months, as I have been visited by adversity upon adversity. *My First Business Book*, a pioneering treatise on managing in the '90s which ought, by rights, to have made Hammer look like a blunt instrument, inexplicably failed to achieve bestseller status (it was, in fact, remaindered after 48 hours). Attempts to sell the movie rights to Barbra Streisand (a lovely woman with a heart as big as her voice) fell through at the last minute. And then there was some silly fuss over a couple of quotes on the dust jacket. (I can understand if professional jealousy drove Peter Drucker to claim he never called the book "America's new business bible." But how Tom Peters can deny making the statement, "I am no longer in search of excellence. I have found it, and its name is Poundcake"—well, all I can say is I am shocked. Shocked.)

I also took something of a bath in the Pentium affair. Reasoning that postage stamps with mistakes on them sometimes sell for hundreds of thousands of dollars, I had attempted to corner the market on PCs containing the flawed chip. This investment proved unwise, plunging me into deeper financial straits.

Now, after months of soul-searching, I have come to the realization that my only possible salvation lies in the total renunciation of all I have stood for. There are just too many gurus out there with buzzier buzzwords, glossier dust jackets and tonier speaking engagements than mine (this should not reflect badly on the many august organizations I have addressed in the last few months, including the National Alliance of Hairnet-Wearing Professionals and the Organization for Preserving Things Regardless of

Continued on Page 76

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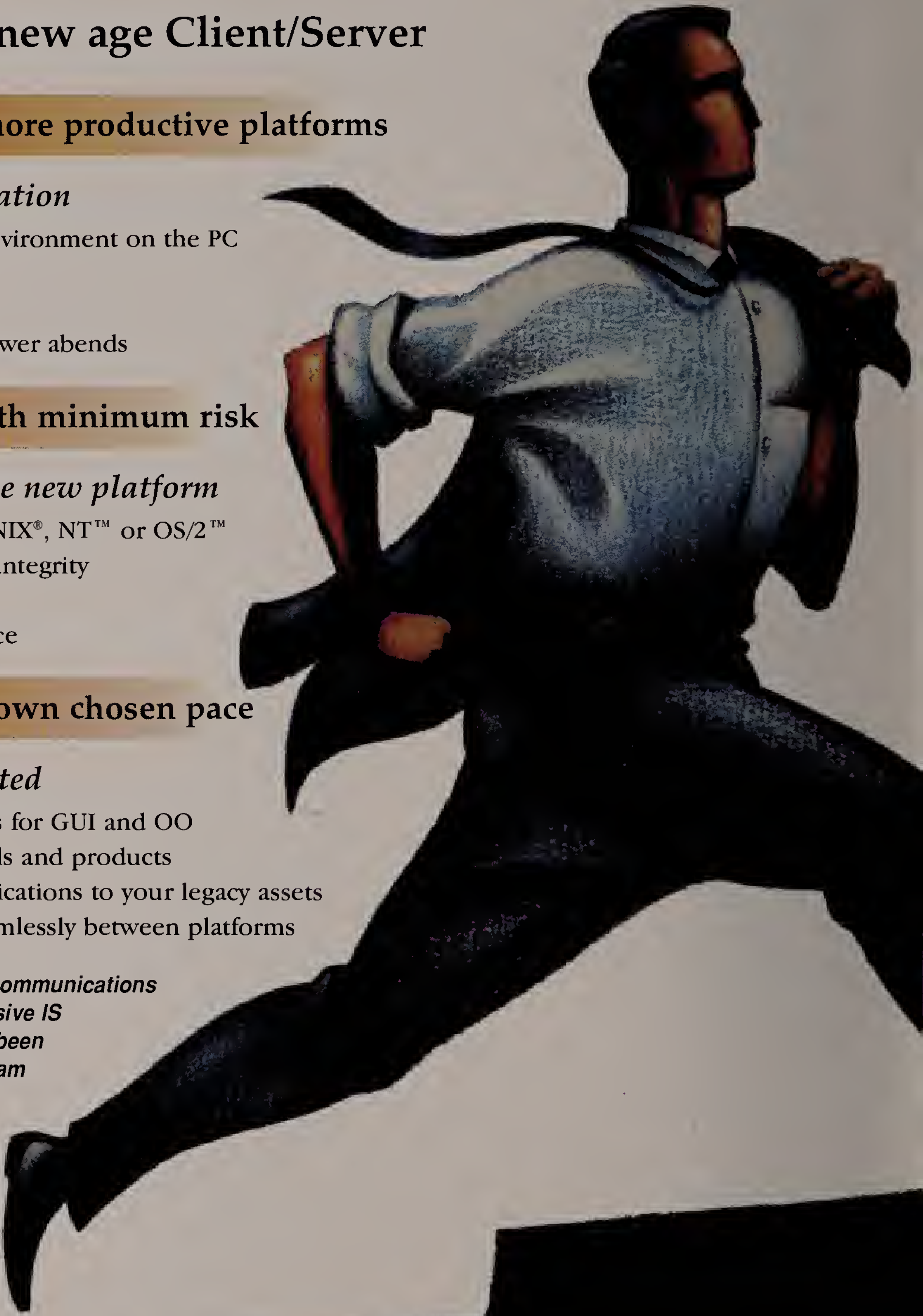

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